

STUDY ON THE EFFECT OF CONSUMPTION OF COCONUT KERNEL AND COCONUT OIL ON THE SERUM LIPID PROFILE



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Study on the Effect of Consumption of Coconut Kernel and Coconut Oil on the Serum Lipid Profile

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Foreword

Coconut oil is one of the traditional dietary fats used by the people in the west coast of India. Unfortunately this oil, being a saturated fat, has been the target of attack linking its consumption to increased level of cholesterol in the body.

The experiments reported to have shown that coconut oil has hypercholesterolemic effects were conducted outside the coconut growing countries and that too in 1950's when advanced clinical and laboratory lipid research techniques were not available. The experimental diets were perhaps 'tailor made' which were completely devoid of essential fatty acids and this is contradictory to the nutritional content in normal human diet under Indian situation. People in India consume mixtures of fats through visible and invisible sources that normally contain enough essential fatty acids. The conclusions arrived at were mainly based on misinterpreted or manipulated data derived from unscientific study. Ayurvedic texts attribute several beneficial qualities to coconut oil. Surprisingly in India no detailed scientific study has so far been conducted to prove or disprove the harmful or useful effects of coconut and coconut oil.

A study sponsored by the Coconut Development Board with a view to re-examining the case thoroughly and verifying the nutritional safety or otherwise of coconut oil was carried out by the Biochemistry Department, University of Kerala under the leadership of Dr. T. Rajamohan from 1992 to 1995. The results of the three year study have shown that the arguments against coconut oil as a cooking oil are unfounded. It has been clearly shown that coconut and coconut oil do not have any deleterious effects but are beneficial for human consumption as a dietary fat. The present publication is the full text of the report of the above study which I believe will help the nutritionists, cardiologists and other medical practitioners to gain access to useful data on the nutritional safety of coconut oil and coconut kernel.

M. Aravindakshan
Chairman
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Kochi 682011

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T. Rajamohan

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LIST OF ACRONYMS

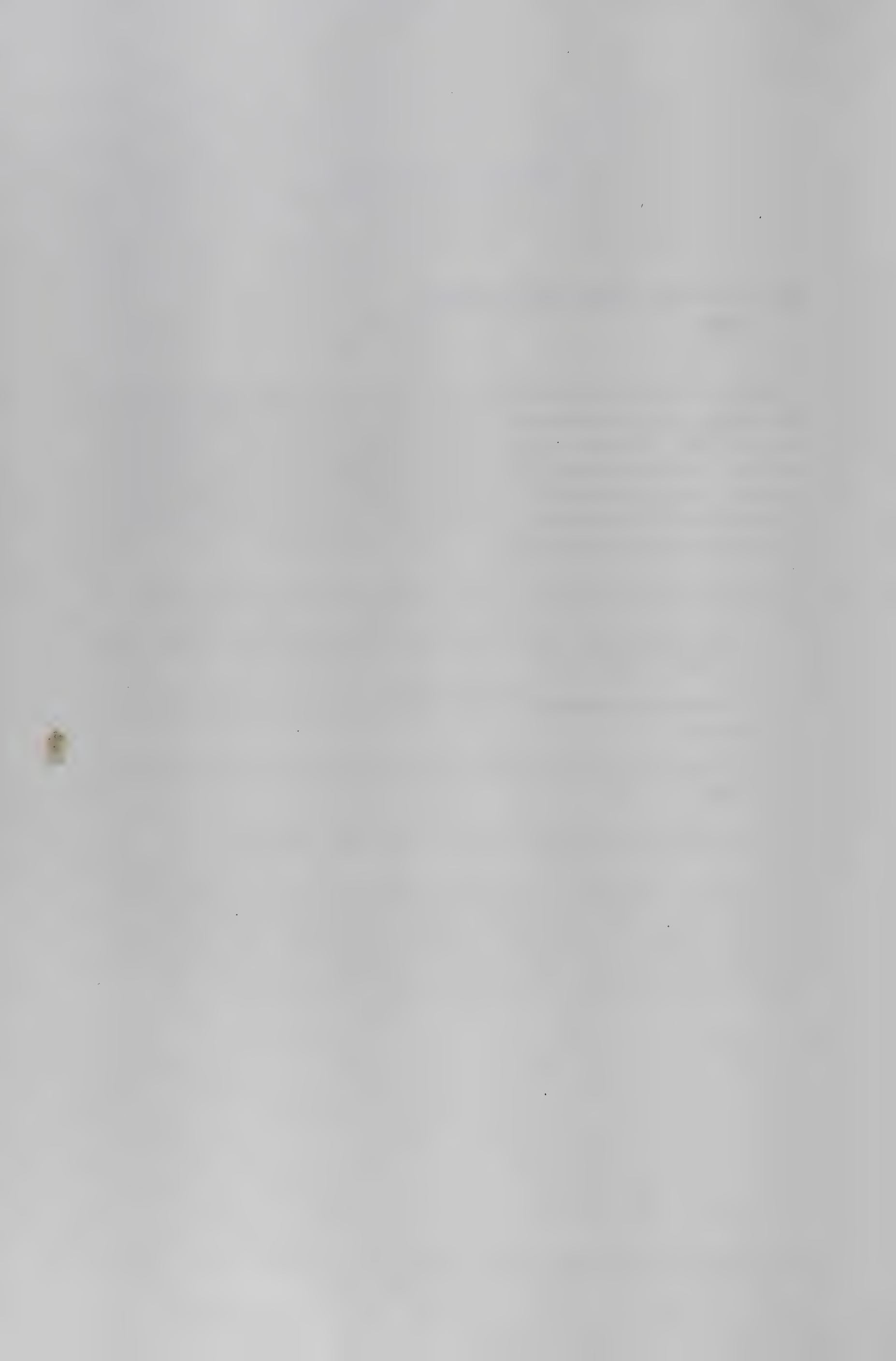
- CN - Coconut oil
- GN - Groundnut oil
- CNK - Coconut oil + Coconut Kernel
- GNK - Groundnut oil + Coconut Kernel
- CAD - Coronary Artery Disease
- HDL - High Density Lipoprotein
- VLDL - Very Low Density Lipoprotein
- LDL - Low Density Lipoprotein
- Chl - Cholesterol
- CVD - Cardio Vascular Disease
- CHD - Coronary Heart Disease
- SFA - Saturated Fatty Acids

Overview and Summary

There is fear among the general population in Kerala that consumption of coconut oil may elevate blood cholesterol thereby predisposing the user to Coronary heart disease (CHD). This fear is based on the fact that coconut oil is a saturated fat and the view that all saturated fat elevates blood cholesterol. But no systematic scientific study has been carried out so far in this respect in human subjects. Such a study has now been undertaken in human subjects under free living conditions. This study revealed the following.

- **Consumption of coconut oil did not elevate blood total cholesterol.**
- **Consumption of coconut kernel along with coconut oil lowered blood cholesterol significantly.**
- **Coconut oil increased blood HDL cholesterol when compared to groundnut oil.**
- **It did not elevate LDL cholesterol or LDL cholesterol/HDL cholesterol ratio.**
- **Consumption of coconut oil decreased serum triglycerides.**

The accepted risk factors for coronary artery disease are elevated blood cholesterol and LDL cholesterol, decreased HDL cholesterol and increased triglycerides. Coconut oil does not cause increase in blood cholesterol or LDL cholesterol, but increased HDL cholesterol and decreased blood triglycerides. Thus it cannot contribute to any of the risk factors involved in coronary artery disease (CAD).



Characteristics of the Population Studied

1. Total number of subjects - 258
2. Total number of Male subjects - 95
3. Total number of Female subjects - 163
4. No. of subjects in the age group 18–40 yrs - 150
5. No. of subjects in the age group 41–65 yrs - 108
6. Subjects with alcohol consumption (Drinking Whisky, Brandy, Rum etc., 100–200 ml/day) - 35
7. Subjects with smoking habit (10–20 cigarettes/day) - 12
8. Total no. of diabetics - 15
9. Subjects with hypertension - 39
10. Subjects with visible fat consumption
 - (i) 10–15% - 89
 - (ii) 15–20% - 148
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12. Subjects with
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 - (v) Ernakulam - 12
15. Daily meat/beef consuming volunteers - 34

16. Total no. of healthy subjects (Diabetics, hypertensive and cholesterol above 230 mg/100 ml excluded) - 163.
17. No. of
 - (i) Vegetarians - 29
 - (ii) Non vegetarians - 209
 - (iii) Fishermen - 20
18. No. of subjects with cholesterol below 230 mg - 237
19. No. of subjects with cholesterol above 230 mg - 21
20. No. of subjects who have completed:
 - (i) 4 Stages of Study - 60
 - (ii) 3 Stages of Study - 110
 - (iii) 2 Stages of Study - 35
 - (iv) 1 Stage of Study - 53
21. Religion of subjects
 - (i) Hindus - 217
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Effect of Consumption of Coconut Kernel and Coconut Oil on Serum Lipid Profile in Human Volunteers

1.1 Introduction

The work which forms the subject matter of this report was undertaken at a time when the controversy on the effect of consumption of Coconut oil and Coconut kernel on serum cholesterol and incidence of Cardiovascular disease (CVD) was at its highest. Many people including those among the medical profession are of the view that consumption of Coconut oil and Coconut kernel elevates serum cholesterol and thus predisposes an individual to Coronary Artery Disease (CAD). On the other hand there are many others who hold the view that Coconut oil and Coconut kernel which are invariable part of our diet are not harmful.

These views appear to be based not on any scientific data since very few scientific studies seems to have been carried out so far on the effect of consumption of Coconut oil and Coconut kernel in human subjects.

The aim of this study was therefore to generate data on the effect of consumption of Coconut oil and Coconut kernel on serum lipid parameters viz total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides and LDL cholesterol/HDL cholesterol ratio.

Coconut oil is a saturated fat and was therefore considered to be hypercholesterolemic and atherogenic, as was believed to be the case with all saturated fat.¹⁻³ But Coconut oil is rather unique in that it contains short and medium chain saturated fatty acids (SFA) as the major component. It contains caprylic acid (C_{8:0})–8%, Capric acid (C_{10:0})–7%, lauric acid–(C_{12:0})–47%, myristic acid (C_{14:0})–17%, Palmitic acid (C_{16:0})–8.85%, and stearic acid (C_{18:0})–2.27%. The short chain saturated fatty acids forms 15%, the medium chain saturated fatty acids–64% and the long chain saturated fatty acids–12%. Monounsaturated fatty acids mostly oleic acid (C_{18:1})–6.27% and Palmitoleic acid (C_{16:1})–1%, while polyunsaturated fatty acids mostly linoleic acid forms 2%.

Short chain fatty acids ($C_{8:0}$ and $C_{10:0}$) have been reported by Hashim *et al.*⁴ to have a cholesterol lowering effect and therefore 15% of the fatty acids in Coconut oil has hypocholesterolemic effect. The lauric fatty acids ($C_{12:0}$) are reported to be metabolised through pathways intermediate to short chain fatty acids and long chain fatty acids.^{5,6} The short chain fatty acids are believed to be rapidly utilised for energy production and do not serve as a substrate for VLDL synthesis in the liver, while long chain fatty acids are partly oxidised and partly converted to cholesterol, triglycerides and other lipids.^{7,8}

An additional feature of Coconut oil is its extremely low linoleic acid content (2%). Linoleic acid is an essential fatty acid and it is known that essential fatty acid deficiency leads to hypercholesterolemia and atherosclerosis.⁹⁻¹²

Most of the early animal experiments on Coconut oil, the results at which led to the condemnation of Coconut oil, used synthetic diet and Coconut oil as the only dietary fat and essential fatty acid deficiency was manifested in these experiments, resulting in hypercholesterolemia and atherosclerosis. But when steps were taken to correct this essential fatty acid deficiency, the results indicated that Coconut oil was not hypercholesterolemic.¹³

As mentioned earlier, very few scientific studies have been carried out on the effect of Coconut oil in human volunteers. Such a study, only which can produce convincing data on the effect of Coconut oil, was therefore undertaken in the population in Kerala.

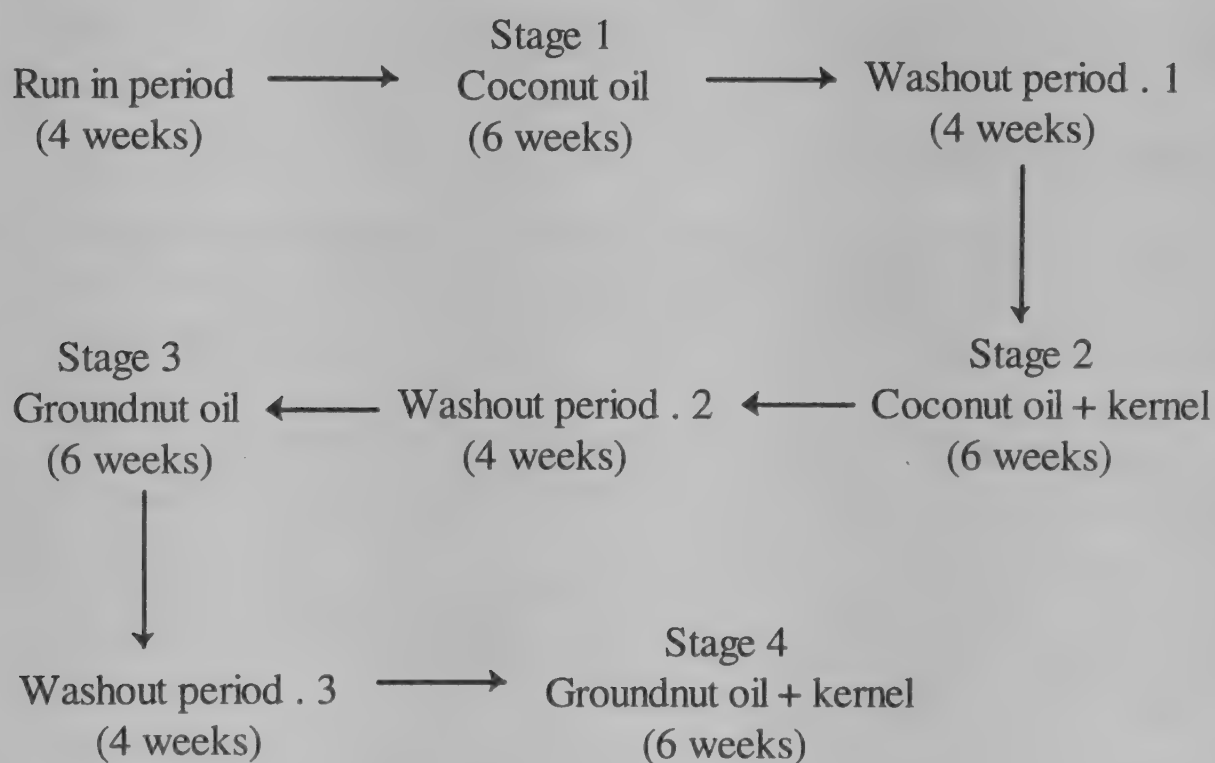
The characteristic feature of Kerala diet is the use of fresh Coconut kernel in most culinary preparations, apart from the use of free Coconut oil. Thus Coconut oil in the diet is partly from the free oil and partly from the Coconut kernel. Coconut kernel contains apart from Coconut oil, 5-6% protein, 7-8% dietary fiber and some polyunsaturated fat as invisible fat. These may also contribute to the effect on Coconut oil on serum cholesterol and atherosclerosis.

In view of this, the effect of consumption of Coconut oil alone and Coconut oil + Kernel as is the practise in Kerala, on serum lipid profile was carried out in human volunteers under free living conditions and compared to Groundnut oil and Groundnut oil + Kernel. The results of this studies spread over a period of 3 years are given in this report.

1.2 Methodology

Subjects selected for this study were from volunteers who responded to newspaper solicitation and personal contacts. Average daily diet intake data in the case of each member of the family of each subject was worked out from a seven day recall elicited by a questionnaire. After a 'run in period' of 4 weeks on their usual diet and life style, medical examination of each subject was carried out. Fasting blood and urine were collected for determining various base line biochemical values (baseline-1). The subjects were then put on a Coconut oil diet for a period of 6

weeks (stage-1) when they consumed only free Coconut oil as the dietary fat and no Coconut kernel. At the end of this period, fasting blood was removed for the determination of serum lipids. After this, the subjects reverted to their prestudy diet for four weeks (washout period-1). At the end of this period, fasting blood was again removed for the analysis of serum lipids (baseline-2). The subjects were then put on Coconut oil + Kernel diet where $\frac{1}{3}$ of the total dietary fat was free Coconut oil and $\frac{2}{3}$ that derived from the coconut kernel (stage-2). At the end of 6 weeks on this diet, fasting blood was removed for analysis of serum lipids. After this the subjects again reverted back to their prestudy diet for 4 weeks (washout period-2). At the end of this period fasting blood was again removed for determination of serum lipids (baseline-3). The subjects were then put on Groundnut oil diet for 6 weeks, when they consumed only Groundnut oil as the sole dietary fat without any Coconut kernel (stage-3). At the end of this period, fasting blood was analysed for serum lipids. The subjects were then reverted back to their prestudy diet for 4 weeks (washout period-3). The subjects were then put on Groundnut oil + Kernel diet for 6 weeks, when they consumed $\frac{1}{3}$ of the dietary fat as Groundnut oil, the remaining $\frac{2}{3}$ as Coconut oil from the coconut kernel. At the end of this period, fasting blood was again analysed for serum lipids.



Biochemical parameters studied:-

1. Serum total cholesterol
2. Serum HDL cholesterol
3. Serum LDL cholesterol

4. Serum Triglycerides

5. Serum LDL cholesterol/HDL cholesterol ratio

Enzymatic methods were used for estimation of total cholesterol and triglycerides. HDL cholesterol was determined as the supernatant from precipitation of VLDL+LDL by polyethylene glycol. LDL cholesterol was calculated using Friedwald and Fredrickson's formula

$$\text{LDL Cholesterol} = \text{Total Cholesterol} - \left[\frac{\text{Triglycerides}}{5} + \text{HDL cholesterol} \right]$$

Kits available from M/S Ranbaxy Diagnostics were used for these estimation. Statistical analysis of the data was carried out using a computer with SPSS/PC+ ver 4.0.

1.2.1 Characteristics of subjects studied

A total number of 258 volunteers belonging to 140 families were studied in a period of 3 years.

Of these subjects 209 were non vegetarians, who consumed meat/beef, fish and eggs, 29 were vegetarians, while 20 subjects were from fishermen community who consumes fish daily. The age of the subjects ranged from 18 to 65 years.

1.2.2 Dietary features

The average total fat intake (free oil + coconut oil derived from Coconut kernel consumed) was 37.70 g/head/day and ranged from 18–66.62 g. The average daily consumption of coconut kernel was 55.77 g/head/day and ranged from 20.80–86 g.

The average quantity of coconut oil derived from the coconut kernel was 22.26 g/head/day and ranged from 8.32 to 34.40 g. The average free oil consumption was 15.40 g/head/day and ranged from 6–38 g. The average percentage contribution of total fat to K.calories was 16.30 %/head/day and ranged from 10.33 to 26.48%/head/day. The average caloric consumption was 2109.77 K.calories and ranged from 1439 to 3005 K.calories.

The average fish consumption was 102.24 g/head/day and ranged from 30–220 g. The average meat/beef consumption in the subjects in Kottayam district was 117.65g/head/day and ranged from 50 to 200g.

The average protein intake was 65.63g/head/day and ranged from 20.60–134.50g. The average carbohydrate intake was 325.19g/head/day and ranged from 124.10 to 514.50 g.

The subjects in most cases were on a mixed fat diet (in decreasing order, coconut oil, palm oil, sunflower oil, groundnut oil) before the study period.

Dietary features of subjects – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	55.77	0.58	9.37	20.80	86.00
Coconut oil derived from kernel (g)	22.26	0.23	3.70	8.32	34.40
Daily free oil intake (g)	15.40	0.31	4.96	6.00	38.00
Total fat intake (g)	37.70	0.40	6.38	18.00	66.62
Protein intake (g)	65.63	1.14	18.23	20.60	134.50
Carbohydrate intake (g)	325.19	4.67	74.98	124.10	514.50
Fish intake (g)	102.24	2.70	40.63	30.00	220.00
Contribution of total fat to K.calories (%)	16.30	0.18	2.92	10.33	26.48
Caloric intake (cals)	2109.77	20.86	329.85	1439.00	3005.00

Dietary features of subjects from **Trivandrum** district – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	53.17	1.04	8.56	28.00	80.00
Coconut oil derived from kernel (g)	21.26	0.42	3.43	11.20	32.00
Daily free oil intake (g)	15.88	0.46	3.83	10.00	26.30
Total fat intake (g)	36.61	0.65	5.32	18.00	52.80
Protein intake (g)	66.27	1.97	16.23	30.10	126.30
Carbohydrate intake (g)	334.56	7.75	63.91	201.90	511.70
Fish intake (g)	122.30	8.52	55.89	40.00	220.00
Contribution of total fat to K.calories (%)	17.01	0.35	2.85	12.21	25.77
Caloric intake (cals)	1992.13	37.58	291.10	1439.00	2697.00

Dietary features of subjects from **Kollam** district – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	58.10	0.92	10.10	33.33	86.00
Coconut oil derived from kernel (g)	23.21	0.36	3.99	13.33	34.40
Daily free oil intake (g)	13.84	0.25	2.76	7.00	22.22
Total fat intake (g)	37.07	0.50	5.50	26.00	56.22
Protein intake (g)	61.81	1.46	16.02	20.60	107.00
Carbohydrate intake (g)	328.16	6.96	76.52	124.10	514.50
Fish intake (g)	97.58	3.32	36.41	40.00	200.00
Contribution of total fat to K.calories (%)	15.93	0.26	2.82	10.33	26.48
Caloric intake (cals)	2123.53	29.54	324.97	1512.00	2893.00

Dietary features of subjects from **Alapuzha** district – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	57.39	0.82	3.91	52.50	65.00
Coconut oil derived from kernel (g)	22.44	0.21	1.02	21.00	24.80
Daily free oil intake (g)	14.37	0.59	2.82	7.00	20.00
Total fat intake (g)	36.81	0.53	2.52	31.80	41.20
Protein intake (g)	65.13	3.33	15.96	29.50	91.60
Carbohydrate intake (g)	306.07	19.37	92.88	157.10	429.60
Fish intake (g)	118.70	6.52	31.27	80.00	200.00
Contribution of total fat to K.calories (%)	15.13	0.57	2.71	10.73	21.54
Caloric intake (cals)	2225.78	68.12	326.71	1671.00	2844.00

Dietary features of subjects from **Kottayam** district – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	53.13	1.55	9.06	20.80	74.00
Coconut oil derived from kernel (g)	21.37	0.63	3.65	8.32	29.60
Daily free oil intake (g)	20.87	1.59	9.25	6.00	38.00
Total fat intake (g)	43.51	1.69	9.83	30.00	66.62
Protein intake (g)	80.08	3.91	22.79	40.60	134.50
Carbohydrate intake (g)	323.70	11.53	67.21	198.70	429.30
Fish intake (g)	84.34	4.13	24.08	30.00	140.00
Contribution of total fat to K.calories (%)	16.67	0.49	2.88	10.68	24.33
Caloric intake (cals)	2244.21	58.60	341.70	1660.00	3005.00

The average meat/beef consumption in the subjects of this district was 117.65 g/day ranged from 50 to 200 g.

Dietary features of subjects from **Ernakulam** district – pre-trial period

Factor	Mean	S.E.M	SD	Minimum	Maximum
Coconut kernel intake (g)	51.30	2.33	8.08	33.33	58.30
Coconut oil derived from kernel (g)	20.53	0.94	3.24	13.33	23.32
Daily free oil intake (g)	15.01	0.77	2.67	10.00	19.08
Total fat intake (g)	35.54	1.36	4.71	26.00	39.08
Protein intake (g)	60.55	6.17	21.38	40.60	107.00
Carbohydrate intake (g)	283.03	26.52	91.86	124.10	457.60
Fish intake (g)	91.71	11.58	30.64	45.00	140.00
Contribution of total fat to K.calories (%)	17.17	1.09	3.78	12.32	23.78
Caloric intake (cals)	1956.00	93.64	324.39	1463.00	2497.00

Effect of Consumption of Coconut Kernel and Coconut Oil on Serum Lipid Profile of Various Categories

2.1 Whole subjects

2.1.1 Serum total cholesterol

Table 1
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	188.64 189.96	2.37 2.47	205	1.11	NS
CNK-Initial CNK-Final	189.64 188.48	2.35 2.42	236	0.98	NS
GN-Initial GN-Final	183.67 180.91	3.93 4.18	71	1.32	NS
GNK-Initial GNK-Final	188.76 191.08	2.54 2.60	178	1.88	S
CNK-Final GNK-Final	190.25 191.08	2.86 2.60	178	0.56	NS

Table 1 (Contd. . .)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Final	193.22	2.57	184	2.29	S
CNK-Final	189.93	2.80			
GN-Final	180.28	4.74	59	0.50	NS
GNK-Final	181.70	4.39			
CN-Final	185.33	3.76	71	1.75	S
GN-Final	180.91	4.18			

CN- Coconut Oil alone; CNK- Coconut Oil + Coconut Kernel
GN- Groundnut Oil alone; GNK- Groundnut Oil + Coconut Kernel

- (i) There was no significant alteration in the total cholesterol after six weeks on Coconut oil alone or Groundnut oil alone, when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to the initial values, while Groundnut oil + Kernel produced an increase.
- (iii) Coconut oil + Kernel produced lower total cholesterol after six weeks when compared to the Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel.
- (iv) Coconut oil after six weeks produced higher total cholesterol when compared to Groundnut oil, while Coconut oil + Kernel showed no significant alteration when compared to Groundnut oil + Kernel.

2.1.2 Serum HDL cholesterol

Table 2
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	45.73	0.680	205	1.45	NS
CN-Final	46.48	0.678			
CNK-Initial	46.59	0.684	236	2.84	S
CNK-Final	48.03	0.689			
GN-Initial	45.22	1.235	71	2.48	S
GN-Final	43.28	1.044			
GNK-Initial	44.20	0.710	177	1.04	NS
GNK-Final	44.72	0.661			
CNK-Final	48.46	0.783	177	6.25	S
GNK-Final	44.72	0.661			
CN-Final	46.78	0.702	184	2.05	S
CNK-Final	48.38	0.777			
GN-Final	44.33	1.070	59	3.06	S
GNK-Final	47.60	0.936			
CN-Final	46.95	0.894	71	3.94	S
GN-Final	43.28	1.044			

- (i) There was no significant alteration in HDL cholesterol with Coconut oil after six weeks when compared to the initial level, while with Groundnut oil, there was a decrease.
- (ii) Coconut oil + Kernel produces higher HDL cholesterol after six weeks when compared to the initial level, while there was no significant alteration in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produces higher HDL cholesterol after six weeks when compared to Coconut oil alone. Similar results were observed in the case of Groundnut oil + Kernel.
- (iv) Coconut oil produced higher HDL cholesterol after six weeks when compared to Groundnut oil. Coconut oil + Kernel also produced higher level when compared to Groundnut oil + Kernel.

2.1.3 Serum LDL cholesterol

Table 3
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	122.31	2.150	205	1.41	NS
CN-Final	124.03	2.317			
CNK-Initial	121.62	2.107	236	1.90	S
CNK-Final	118.95	2.157			
GN-Initial	119.02	3.663	71	0.08	NS
GN-Final	119.19	3.761			
GNK-Initial	122.07	2.280	178	0.73	NS
GNK-Final	122.96	2.389			
CNK-Final	120.66	2.563	178	1.41	NS
GNK-Final	122.96	2.389			
CN-Final	126.30	2.489	184	3.65	S
CNK-Final	120.50	2.478			
GN-Final	119.06	4.329	59	1.30	NS
GNK-Final	115.68	3.998			
CN-Final	121.76	3.529	71	1.04	NS
GN-Final	119.19	3.761			

- (i) Coconut oil or Groundnut oil produced no significant alteration in LDL cholesterol after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced significantly lower level after six weeks when compared to the initial level, while there was no significant alteration in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) There was no significant difference in the LDL cholesterol after six weeks on Coconut oil alone or Groundnut oil alone and in the case of Coconut oil + Kernel or Groundnut oil + Kernel.

2.1.4 Serum triglycerides

Table 4
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	106.39	4.109	205	3.32	S
CN-Final	99.43	3.984			
CNK-Initial	106.37	3.996	236	0.03	NS
CNK-Final	106.30	3.645			
GN-Initial	98.22	5.115	71	0.74	NS
GN-Final	95.56	5.657			
GNK-Initial	111.92	4.861	161	1.37	NS
GNK-Final	115.58	5.039			
CNK-Final	109.47	4.625	161	2.32	S
GNK-Final	115.58	5.039			
CN-Final	103.61	4.296	184	2.65	S
CNK-Final	109.41	4.197			
GN-Final	88.88	4.836	59	0.69	NS
GNK-Final	91.28	4.707	59		
CN-Final	87.05	4.481	71	2.70	S
GN-Final	95.56	5.657			

- (i) Coconut oil produced lower triglycerides after six weeks when compared to the initial level, while there was no significant alteration in the case of Groundnut oil.
- (ii) Coconut oil + Kernel produced no significant alteration in triglycerides after six weeks when compared to the initial level. Similar results were observed in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produced higher triglycerides after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil after six weeks produced lower triglycerides when compared to Groundnut oil after six weeks. Similar results were observed with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.1.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 5
LDL cholesterol/HDL cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	2.817 2.809	0.071 0.075	205	0.16	NS
CNK-Initial CNK-Final	2.774 2.591	0.071 0.059	236	3.41	S
GN-Initial GN-Final	2.802 2.878	0.124 0.116	71	0.90	NS
GNK-Initial GNK-Final	2.924 2.887	0.078 0.077	177	0.82	NS
CN-Final CNK-Final	2.848 2.603	0.082 0.067	184	3.86	S
GN-Final GNK-Final	2.777 2.503	0.117 0.109	59	3.35	S
CNK-Final GNK-Final	2.607 2.887	0.067 0.077	177	4.89	S
CN-Final GN-Final	2.668 2.878	0.102 0.116	71	2.68	S

- There was no significant difference in the ratio with Coconut oil or Groundnut oil after six weeks when compared to the corresponding initial levels.
- Coconut oil + Kernel produced lower LDL cholesterol/HDL cholesterol ratio after six weeks when compared to the corresponding initial level, while there was no significant alteration in the case of Groundnut oil + Kernel.
- Coconut oil + Kernel produced lower ratio after six weeks when compared to Coconut oil alone. Similar results were observed in the case of Groundnut oil + Kernel.
- Coconut oil produced lower ratio after six weeks when compared to Groundnut oil. Similar results were observed with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.2 Normocholesterolemic subjects (diabetics, hypertensive and subjects with cholesterol above 230 mg/100ml excluded)

2.2.1 Serum total cholesterol

Table 6
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	179.86 180.10	2.035 2.203	162	0.18	NS
CNK-Initial CNK-Final	181.72 179.42	2.507 2.581	142	1.40	NS
GN-Initial GN-Final	176.04 172.67	3.558 3.677	58	1.41	NS
GNK-Initial GNK-Final	182.08 183.88	2.426 2.572	122	1.23	NS
CNK-Final GNK-Final	181.23 183.88	2.821 2.572	122	1.45	NS
CN-Final CNK-Final	183.06 179.42	2.297 2.581	142	2.17	S
GN-Final GNK-Final	171.80 174.14	3.968 4.003	49	0.72	NS
CN-Final GN-Final	177.73 172.67	3.322 3.677	58	1.83	S

- (i) Coconut oil or Groundnut oil did not produce any significant alteration in the total cholesterol after six weeks when compared to the corresponding initial levels.
- (ii) Coconut oil + Kernel or Groundnut oil + Kernel also did not produce any significant alteration after six weeks when compared to the corresponding initial levels.
- (iii) Coconut oil + Kernel produced lower total cholesterol after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.

- (iv) Coconut oil produced higher total cholesterol after six weeks when compared to Groundnut oil, while there was no significant difference in the case of Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.2.2 Serum HDL cholesterol

Table 7
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	45.87 46.91	0.744 0.752	162	1.77	S
CNK-Initial CNK-Final	47.38 48.38	0.800 0.879	142	1.47	NS
GN-Initial GN-Final	45.64 43.63	1.379 1.189	58	2.21	S
GNK-Initial GNK-Final	45.01 45.40	0.796 0.724	121	0.60	NS
CNK-Final GNK-Final	48.74 45.40	0.935 0.724	121	4.37	S
CN-Final CNK-Final	47.52 48.38	0.793 0.879	142	0.96	NS
GN-Final GNK-Final	44.34 47.44	1.237 1.007	49	2.47	S
CN-Final GN-Final	46.91 43.63	0.913 1.189	58	3.18	S

- (i) HDL cholesterol was higher with Coconut oil after six weeks when compared to the initial level, while it was lower with Groundnut oil after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel produced no significant alteration in HDL cholesterol after six weeks when compared to Coconut oil alone, while the level was higher with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced significantly higher HDL cholesterol after 6 weeks when compared to Groundnut oil. Coconut oil + Kernel also produced higher

HDL cholesterol when compared to Groundnut oil + Kernel.

2.2.3 Serum LDL cholesterol

Table 8
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	115.78	1.966	162	0.53	NS
CN-Final	116.47	2.152			
CNK-Initial	115.55	2.353	142	1.61	NS
CNK-Final	112.77	2.401			
GN-Initial	111.87	3.254	58	0.06	NS
GN-Final	112.01	3.245			
GNK-Initial	117.58	2.362	122	0.18	NS
GNK-Final	117.85	2.567			
CNK-Final	114.88	2.656	122	1.54	NS
GNK-Final	117.85	2.567			
CN-Final	118.35	2.348	142	3.09	S
CNK-Final	112.77	2.401			
GN-Final	111.44	3.604	49	0.79	NS
GNK-Final	109.27	3.731			
CN-Final	115.34	3.182	58	1.25	NS
GN-Final	112.01	3.245			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in LDL cholesterol after six weeks when compared to the corresponding initial levels.
- (ii) Coconut oil + Kernel or Groundnut oil + Kernel also did not produced any significant alteration in LDL cholesterol after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) The LDL cholesterol level after weeks was comparable in the case of Coconut oil and Groundnut oil. Similar results were obtained in the case of Coconut oil + Kernel and Groundnut oil + Kernel.

2.2.4 Serum triglycerides

Table 9
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	97.62 88.67	3.876 3.474	162	3.95	S
CNK-Initial CNK-Final	96.77 98.34	4.216 3.982	142	0.63	NS
GN-Initial GN-Final	94.25 89.35	5.394 5.215	58	1.25	NS
GNK-Initial GNK-Final	98.97 102.80	4.788 5.041	122	1.59	NS
CNK-Final GNK-Final	97.12 102.80	4.277 5.041	122	2.02	S
CN-Final CNK-Final	92.44 98.34	3.793 3.982	142	2.50	S
GN-Final GNK-Final	85.49 86.09	5.312 4.986	49	0.15	NS
CN-Final GN-Final	82.203 89.350	4.315 5.215	58	2.13	S

- (i) Coconut oil produced lower triglycerides after six weeks when compared to initial values while there was no significant difference in the case of Groundnut oil.
- (ii) There was no significant alteration in the case of Coconut oil + Kernel or Groundnut oil + Kernel after six weeks when compared to the corresponding initial level.
- (iii) Triglycerides were elevated with Coconut oil + Kernel after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel.
- (iv) Coconut oil produced lower triglycerides after six weeks when compared to Groundnut oil. Similar results were obtained with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.2.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 10
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.642	0.067	162	1.14	NS
CN-Final	2.595	0.068			
CNK-Initial	2.553	0.072	142	1.80	S
CNK-Final	2.439	0.068			
GN-Initial	2.611	0.123	58	0.81	NS
GN-Final	2.687	0.110			
GNK-Initial	2.755	0.084	121	0.72	NS
GNK-Final	2.713	0.086			
CN-Final	2.607	0.076	142	2.54	S
CNK-Final	2.439	0.068			
GN-Final	2.613	0.110	49	2.80	S
GNK-Final	2.370	0.105			
CNK-Final	2.472	0.073	121	3.37	S
GNK-Final	2.713	0.086			
CN-Final	2.515	0.089	58	2.29	S
GN-Final	2.687	0.110			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in the ratio after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel had lower ratio after six weeks when compared to the initial value, while there was no significant difference in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel had lower ratio after six weeks when compared to Coconut oil alone. Similar results were observed with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil + Kernel produced lower ratio after six weeks when compared to Groundnut oil + Kernel. Similar results were obtained with Coconut oil alone compared to Groundnut oil alone.

2.3 Male population

2.3.1 Serum total cholesterol

Table 11
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	189.21	3.513	79	0.62	NS
CN-Final	190.47	3.730			
CNK-Initial	186.84	3.573	90	0.50	NS
CNK-Final	185.99	3.685			
GN-Initial	179.16	6.509	31	0.01	NS
GN-Final	179.19	6.336			
GNK-Initial	186.50	3.575	76	1.43	NS
GNK-Final	189.08	3.783			
CNK-Final	189.08	3.980	76	0.00	NS
GNK-Final	189.07	3.783			
CN-Final	191.24	3.835	75	1.14	NS
CNK-Final	188.81	4.062			
GN-Final	178.89	6.733	28	0.41	NS
GNK-Final	177.33	6.966			
CN-Final	178.54	5.726	31	0.18	NS
GN-Final	179.19	6.336			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in total cholesterol after six weeks when compared to the corresponding initial levels.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil or Groundnut oil produced comparable levels after six weeks. Similar was the case with Coconut oil + Kernel or Groundnut oil + Kernel.
- (iv) Coconut oil + Kernel produced similar total cholesterol levels after six weeks when compared to Coconut oil alone. Similar results were observed with Groundnut oil + Kernel when compared to Groundnut oil alone.

2.3.2 Serum HDL cholesterol

Table 12
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	42.814	0.936	79	1.67	S
CN-Final	43.946	1.034			
CNK-Initial	43.426	1.045	90	1.56	NS
CNK-Final	44.627	0.875			
GN-Initial	45.208	1.746	31	1.04	NS
GN-Final	43.930	1.714			
GNK-Initial	40.003	0.951	76	1.50	NS
GNK-Final	41.152	0.918			
CNK-Final	44.731	0.956	76	4.25	S
GNK-Final	41.152	0.918			
CN-Final	43.716	1.036	75	1.22	NS
CNK-Final	44.950	0.959			
GN-Final	44.699	1.826	28	0.17	NS
GNK-Final	44.954	1.283			
CN-Final	45.081	1.126	31	0.78	NS
GN-Final	43.930	1.714			

- (i) HDL cholesterol was significantly higher with Coconut oil after six weeks when compared to the initial level, while there was no significant alteration in the case of Groundnut oil after six weeks when compared to the initial levels.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial levels.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alterations when compared to Coconut oil alone or Groundnut oil alone respectively.
- (iv) There was no significant difference in HDL cholesterol with Coconut oil after six weeks when compared to Groundnut oil. Coconut oil + Kernel after six weeks produced higher levels when compared to Groundnut oil + Kernel.

2.3.3 Serum LDL cholesterol

Table 13
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance
CN-Initial	124.84	3.334	79	0.07	NS
CN-Final	124.70	3.614			
CNK-Initial	119.79	3.289	90	0.93	NS
CNK-Final	117.77	3.396			
GN-Initial	114.04	6.148	31	0.56	NS
GN-Final	115.77	5.602			
GNK-Initial	121.22	3.324	76	0.14	NS
GNK-Final	121.47	3.585			
CNK-Final	120.21	3.729	76	0.49	NS
GNK-Final	121.47	3.585			
CN-Final	125.45	3.734	75	2.09	S
CNK-Final	120.69	3.671			
GN-Final	115.26	5.985	28	0.85	NS
GNK-Final	112.20	6.365			
CN-Final	115.56	4.968	31	0.06	NS
GN-Final	115.77	5.602			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the corresponding initial levels
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial levels.
- (iii) Coconut oil + Kernel produced lower levels after six weeks when compared to Coconut oil alone, while there was no significant difference with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) There was no significant difference in the level with Coconut oil after six weeks when compared to Groundnut oil. Similar results were observed with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.3.4 Serum triglycerides

Table 14
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	120.80	8.013	79	0.49	NS
CN-Final	119.00	7.778			
CNK-Initial	123.03	7.674	90	0.83	NS
CNK-Final	119.94	6.712			
GN-Initial	99.03	6.395	31	0.43	NS
GN-Final	96.44	6.337			
GNK-Initial	130.92	7.805	70	1.65	NS
GNK-Final	138.98	9.152			
CNK-Final	123.81	7.886	70	3.47	S
GNK-Final	138.98	9.152			
CN-Final	120.75	8.092	75	1.10	NS
CNK-Final	124.74	7.588			
GN-Final	94.35	6.488	28	1.44	NS
GNK-Final	100.86	7.428			
CN-Final	91.57	5.241	31	1.24	NS
GN-Final	96.44	6.337			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the corresponding initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to Coconut oil alone or Groundnut oil alone.
- (iv) There was no significant difference with Coconut oil after six weeks when compared to Groundnut oil, but Coconut oil + Kernel produced lower levels when compared to Groundnut oil + Kernel.

2.3.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 15
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.056	0.115			
CN-Final	3.006	0.128	79	0.65	NS
CNK-Initial	2.931	0.112			
CNK-Final	2.732	0.094	90	2.35	S
GN-Initial	2.682	0.194			
GN-Final	2.771	0.171	31	0.66	NS
GNK-Initial	3.184	0.121			
GNK-Final	3.104	0.129	76	1.04	NS
CN-Final	3.037	0.133			
CNK-Final	2.772	0.099	75	2.61	S
GN-Final	2.709	0.176			
GNK-Final	2.592	0.186	28	0.94	NS
CNK-Final	2.772	0.098			
GNK-Final	3.104	0.129	76	3.43	S
CN-Final	2.614	0.126			
GN-Final	2.771	0.171	31	1.38	NS

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced lower ratio after six weeks when compared to the initial value, but there was no significant alteration with Groundnut oil + Kernel after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced lower ratio when compared to Coconut oil alone, while there was no significant alteration with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced similar ratio when compared to Groundnut oil after six weeks, while Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel.

2.4 Female population

2.4.1 Serum total cholesterol

Table 16
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	188.28	3.175			
CN-Final	189.64	3.282	125	0.94	NS
CNK-Initial	191.39	3.088			
CNK-Final	190.02	3.197	145	0.84	NS
GN-Initial	187.28	4.788			
GN-Final	182.29	5.625	39	1.85	S
GNK-Initial	190.46	3.558			
GNK-Final	192.60	3.558	101	1.26	NS
CNK-Final	191.03	4.032			
GNK-Final	192.60	3.558	101	0.70	NS
CN-Final	194.59	3.459			
CNK-Final	190.71	3.818	108	2.01	S
GN-Final	181.57	6.761			
GNK-Final	185.79	5.447	30	0.99	NS
CN-Final	190.771	4.884			
GN-Final	182.288	5.625	39	2.46	S

- (i) Coconut oil did not produced any significant alteration in total cholesterol after six weeks compared to initial level, while Groundnut oil produced a decrease.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks compared to the corresponding initial level.
- (iii) Coconut oil + Kernel produced lower total cholesterol after six weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced higher level after six weeks when compared to Groundnut oil, while there was no significant difference in the case of Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.4.2 Serum HDL cholesterol

Table 17
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	47.59	0.903	125	0.69	NS
CN-Final	48.09	0.865			
CNK-Initial	48.57	0.863	145	2.37	S
CNK-Final	50.15	0.937			
GN-Initial	45.22	1.749	39	2.44	S
GN-Final	42.75	1.299			
GNK-Initial	47.40	0.901	100	0.05	NS
GNK-Final	47.43	0.840			
CNK-Final	51.30	1.093	100	4.60	S
GNK-Final	47.43	0.840			
CN-Final	48.91	0.895	108	1.65	NS
CNK-Final	50.78	1.082			
GN-Final	43.98	1.198	30	4.60	S
GNK-Final	50.08	1.213			
CN-Final	48.44	1.298	39	5.17	S
GN-Final	42.75	1.299			

- (i) Coconut oil after six weeks did not produced any significant alteration when compared to initial level, while with Groundnut oil there was a decrease after six weeks.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to initial level, while with Groundnut oil + Kernel there was no significant alteration after six weeks.
- (iii) Coconut oil + Kernel after six weeks produced similar HDL cholesterol when compared to Coconut oil alone, while with Groundnut oil + Kernel there was an increase after six weeks when compared to Groundnut oil alone.
- (iv) Coconut oil produced higher HDL cholesterol when compared to Groundnut oil. Similar results were observed with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.4.3 Serum LDL cholesterol

Table 18
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	120.70	2.806	125	1.93	S
CN-Final	123.60	3.025			
CNK-Initial	122.76	2.742	145	1.67	S
CNK-Final	119.69	2.797			
GN-Initial	123.00	4.362	39	0.34	NS
GN-Final	121.93	5.095			
GNK-Initial	122.72	3.128	101	0.83	NS
GNK-Final	124.08	3.213			
CNK-Final	120.99	3.523	101	1.47	NS
GNK-Final	124.08	3.213			
CN-Final	126.89	3.339	108	2.99	S
CNK-Final	120.37	3.351			
GN-Final	122.61	6.261	30	0.97	NS
GNK-Final	118.93	4.973			
CN-Final	126.72	4.868	39	1.31	NS
GN-Final	121.93	5.095			

- (i) LDL cholesterol was higher with Coconut oil after 6 weeks when compared to the initial level, while it was not significantly different in the case of Groundnut oil after six weeks.
- (ii) Coconut oil + Kernel produced lower LDL cholesterol after 6 weeks when compared to the initial level, while there was no significant difference in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Coconut oil alone, but there was no significant difference in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) There was no significant difference in LDL cholesterol in the case of Coconut oil when compared to Groundnut oil after six weeks. Similar results were obtained in the case of Coconut oil + Kernel and Groundnut oil + Kernel.

2.4.4 Serum triglycerides

Table 19
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	97.25	4.216	125	4.09	S
CN-Final	87.00	3.887			
CNK-Initial	95.99	4.179	145	0.75	NS
CNK-Final	97.81	4.047			
GN-Initial	97.57	7.727	39	0.61	NS
GN-Final	94.85	8.905			
GNK-Initial	97.09	5.719	90	0.08	NS
GNK-Final	97.32	4.646			
CNK-Final	98.29	5.218	90	0.32	NS
GNK-Final	97.32	4.646			
CN-Final	91.66	4.295	108	2.60	S
CNK-Final	98.72	4.526			
GN-Final	83.77	7.103	30	0.28	NS
GNK-Final	82.32	5.534			
CN-Final	83.44	6.897	39	2.43	S
GN-Final	94.85	8.905			

- (i) Triglycerides were significantly lower with Coconut oil after 6 weeks when compared to initial value, while in the case of Groundnut oil there was no significant difference.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel produced higher triglycerides after 6 weeks when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced lower triglycerides after six weeks when compared to Groundnut oil, while there was no significant difference when Coconut oil + Kernel is compared to Groundnut oil + Kernel.

2.4.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 20
LDL cholesterol/HDL cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.665	0.087	125	0.32	NS
CN-Final	2.684	0.091			
CNK-Initial	2.676	0.091	145	2.48	S
CNK-Final	2.503	0.074			
GN-Initial	2.898	0.162	39	0.61	NS
GN-Final	2.962	0.158			
GNK-Initial	2.726	0.098	100	0.08	NS
GNK-Final	2.722	0.091			
CN-Final	2.716	0.103	108	2.83	S
CNK-Final	2.485	0.088			
GN-Final	2.840	0.157	30	4.13	S
GNK-Final	2.420	0.119			
CNK-Final	2.481	0.089	100	3.48	S
GNK-Final	2.722	0.091			
CN-Final	2.711	0.154	39	2.32	S
GN-Final	2.962	0.158			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced lower ratio after six weeks when compared to the initial values, while there was no significant alteration in the case of Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produced lower ratio when compared to Coconut oil alone. Similar results were obtained with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced lower ratio when compared to Groundnut oil. Coconut oil + Kernel also produced lower ratio when compared to Groundnut oil + Kernel.

2.5 Whole population in the age group 18–40 years

2.5.1 Serum total cholesterol

Table 21
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	179.27	2.640			
CN-Final	179.27	2.857	123	0.01	NS
CNK-Initial	180.08	2.733			
CNK-Final	179.11	2.852	136	0.62	NS
GN-Initial	171.56	3.692			
GN-Final	169.45	4.171	51	0.79	NS
GNK-Initial	180.71	3.065			
GNK-Final	183.97	3.110	103	2.16	S
CNK-Final	180.73	3.298			
GNK-Final	183.97	3.110	103	1.72	S
CN-Final	183.04	2.949			
CNK-Final	180.21	3.205	110	1.46	NS
GN-Final	168.32	4.660			
GNK-Final	172.52	4.555	42	1.16	NS
CN-Final	176.53	3.981			
GN-Final	169.45	4.171	51	2.27	S

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in total cholesterol after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to the initial value, while in the case of Groundnut oil + Kernel there was an increase after six weeks.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alterations when compared to Coconut oil and Groundnut oil alone.
- (iv) Coconut oil produced higher cholesterol when compared to Groundnut oil, but Coconut oil + Kernel produced lower cholesterol when compared to Groundnut oil + Kernel.

2.5.2 Serum HDL cholesterol

Table 22
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	46.29	0.863	123	0.67	NS
CN-Final	46.73	0.847			
CNK-Initial	47.30	0.886	136	1.28	NS
CNK-Final	48.15	0.890			
GN-Initial	45.07	1.437	51	2.04	S
GN-Final	43.05	1.273			
GNK-Initial	45.30	0.933	103	0.97	NS
GNK-Final	45.97	0.842			
CNK-Final	48.74	1.033	103	3.52	S
GNK-Final	45.97	0.842			
CN-Final	47.33	0.869	110	0.99	NS
CNK-Final	48.35	0.995			
GN-Final	44.35	1.359	42	2.40	S
GNK-Final	47.58	1.127			
CN-Final	46.91	0.990	51	3.45	S
GN-Final	43.05	1.273			

- (i) Coconut oil caused no significant alteration in HDL cholesterol after six weeks when compared to the initial values, while Groundnut oil produced a decrease after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks, when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel after six weeks produced no significant alteration when compared to Coconut oil alone, while there was an increase in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced higher HDL cholesterol when compared to Groundnut oil alone. Similar results were obtained in the case of Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.5.3 Serum LDL cholesterol

Table 23
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	115.76	2.557	123	0.52	NS
CN-Final	116.56	2.821			
CNK-Initial	115.65	2.565	136	1.15	NS
CNK-Final	113.77	2.618			
GN-Initial	108.81	3.553	51	0.66	NS
GN-Final	110.61	3.825			
GNK-Initial	117.01	2.859	103	1.10	NS
GNK-Final	118.67	2.978			
CNK-Final	115.49	3.064	103	1.68	S
GNK-Final	118.67	2.978			
CN-Final	119.19	3.036	110	2.10	S
CNK-Final	114.74	2.994			
GN-Final	109.41	4.277	42	0.17	NS
GNK-Final	108.86	4.156			
CN-Final	115.15	3.863	51	1.50	NS
GN-Final	110.61	3.825			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in LDL cholesterol after six weeks when compared to the corresponding initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration in LDL cholesterol after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel produced lower values when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) There was no significant difference in the LDL cholesterol with Coconut oil when compared to Groundnut oil, while Coconut oil + Kernel produced lower LDL cholesterol when compared to Groundnut oil + Kernel.

2.5.4 Serum triglycerides

Table 24
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	93.33	4.303	123	2.90	S
CN-Final	85.89	4.018			
CNK-Initial	90.04	4.011	136	0.57	NS
CNK-Final	91.36	4.000			
GN-Initial	87.88	4.563	51	1.21	NS
GN-Final	83.04	4.373			
GNK-Initial	95.43	5.238	96	1.00	NS
GNK-Final	97.80	4.986			
CNK-Final	92.23	4.795	96	1.97	S
GNK-Final	97.80	4.986			
CN-Final	89.32	4.352	110	1.38	NS
CNK-Final	92.77	4.352			
GN-Final	77.74	3.921	42	0.80	NS
GNK-Final	80.78	3.741			
CN-Final	77.76	3.721	51	1.72	S
GN-Final	83.04	4.373			

- (i) Triglycerides were lower with Coconut oil after six weeks when compared to the initial values, while there was no significant difference in the case of Groundnut oil after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant difference, when compared to Coconut oil or Groundnut oil alone.
- (iv) Coconut oil produced lower triglycerides when compared to Groundnut oil. Similar results were obtained with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.5.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 25
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.633	0.086	123	0.55	NS
CN-Final	2.601	0.086			
CNK-Initial	2.590	0.086	136	1.64	NS
CNK-Final	2.484	0.075			
GN-Initial	2.576	0.137	51	1.19	NS
GN-Final	2.695	0.128			
GNK-Initial	2.736	0.102	103	0.44	NS
GNK-Final	2.711	0.102			
CN-Final	2.631	0.095	110	1.78	S
CNK-Final	2.497	0.086			
GN-Final	2.556	0.117	42	2.14	S
GNK-Final	2.351	0.114			
CNK-Final	2.495	0.088	103	2.81	S
GNK-Final	2.711	0.102			
CN-Final	2.506	0.100	51	2.24	S
GN-Final	2.695	0.128			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in the ratio after six weeks when compared to the respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration in the ratio after six weeks when compared to the corresponding initial values.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratios when compared to Coconut oil or Groundnut oil alone.
- (iv) Coconut oil produced lower ratio when compared to Groundnut oil. Similar results were obtained in the case of Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.6 Whole population in the age group 41–65 years

2.6.1 Serum total cholesterol

Table 26
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	202.82	3.940	81	1.77	S
CN-Final	206.14	3.831			
CNK-Initial	202.75	3.742	99	0.78	NS
CNK-Final	201.31	3.873			
GN-Initial	215.18	6.351	19	1.45	NS
GN-Final	210.70	7.006			
GNK-Initial	199.92	4.007	74	0.49	NS
GNK-Final	200.94	4.214			
CNK-Final	203.44	4.676	74	1.07	NS
GNK-Final	200.94	4.214			
CN-Final	208.48	4.089	73	1.90	S
CNK-Final	204.51	4.599			
GN-Final	210.53	8.245	16	1.35	NS
GNK-Final	204.94	8.086			
CN-Final	208.22	6.461	19	0.64	NS
GN-Final	210.70	7.006			

- (i) With Coconut oil total cholesterol was higher after six weeks when compared to the initial value, while with Groundnut oil there was no significant alteration.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the corresponding initial values.
- (iii) Coconut oil + Kernel produced lower total cholesterol after six weeks when compared to Coconut oil alone, while there was no significant difference with Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant difference when compared to Groundnut oil or Groundnut oil + Kernel.

2.6.2 Serum HDL cholesterol

Table 27
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	44.90	1.100	81	1.50	NS
CN-Final	46.10	1.127			
CNK-Initial	45.63	1.073	99	2.92	S
CNK-Final	47.87	1.093			
GN-Initial	45.61	2.469	19	1.44	NS
GN-Final	43.86	1.824			
GNK-Initial	42.65	1.077	73	0.43	NS
GNK-Final	42.96	1.036			
CNK-Final	48.07	1.205	73	5.65	S
GNK-Final	42.96	1.036			
CN-Final	45.95	1.175	73	2.08	S
CNK-Final	48.43	1.251			
GN-Final	44.27	1.619	16	2.01	S
GNK-Final	47.67	1.720			
CN-Final	47.03	1.978	19	1.85	S
GN-Final	43.86	1.824			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the respective initial values.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to the initial value, while there was no significant alteration in the case of Groundnut oil + Kernel after six weeks.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel produced higher HDL cholesterol when compared to Coconut oil or Groundnut oil alone.
- (iv) Both Coconut oil and Coconut oil + Kernel produced higher HDL cholesterol when compared to Groundnut oil or Groundnut oil + Kernel.

2.6.3 Serum LDL cholesterol

Table 28
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	132.21	3.514	81	1.57	NS
CN-Final	135.33	3.639			
CNK-Initial	129.79	3.396	99	1.52	NS
CNK-Final	126.04	3.537			
GN-Initial	145.57	6.408	19	1.08	NS
GN-Final	141.50	7.205			
GNK-Initial	129.09	3.593	74	0.10	NS
GNK-Final	128.89	3.853			
CNK-Final	127.82	4.289	74	0.37	NS
GNK-Final	128.89	3.853			
CN-Final	136.95	3.950	73	3.29	S
CNK-Final	129.14	4.089			
GN-Final	143.47	8.396	16	2.50	S
GNK-Final	132.92	8.208			
CN-Final	138.95	6.471	19	0.62	NS
GN-Final	141.50	7.205			

- (i) Neither Coconut oil nor Groundnut oil produced any alteration in LDL cholesterol after six weeks when compared to the corresponding initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel caused any alteration after six weeks when compared to the corresponding initial values.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel produced lower values when compared to Coconut oil or Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant alteration when compared to Groundnut oil or Groundnut oil + Kernel.

2.6.4 Serum triglycerides

Table 29
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	126.15	7.537	81	1.75	S
CN-Final	119.91	7.433			
CNK-Initial	128.75	7.153	99	0.53	NS
CNK-Final	126.78	6.134			
GN-Initial	125.11	12.408	19	0.38	NS
GN-Final	128.11	14.827			
GNK-Initial	136.52	8.422	64	0.99	NS
GNK-Final	142.11	9.229			
CNK-Final	135.21	8.087	64	1.36	NS
GNK-Final	142.11	9.227			
CN-Final	125.06	7.937	73	2.35	S
CNK-Final	134.36	7.347			
GN-Final	117.06	11.532	16	0.10	NS
GNK-Final	117.85	11.571			
CN-Final	111.20	11.443	19	2.14	S
GN-Final	128.11	14.827			

- (i) Coconut oil produced lower triglycerides after six weeks compared to the initial values, while there was no significant alteration in the case of Groundnut oil after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel produced higher triglycerides when compared to Coconut oil alone, but there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced lower triglycerides when compared to Groundnut oil, while in the case of Coconut oil + Kernel and Groundnut oil + Kernel there was no significant alteration.

2.6.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 30
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.095	0.115	81	0.36	NS
CN-Final	3.124	0.130			
CNK-Initial	3.027	0.117	99	3.18	S
CNK-Final	2.738	0.092			
GN-Initial	3.390	0.227	19	0.25	NS
GN-Final	3.352	0.225			
GNK-Initial	3.188	0.144	73	0.74	NS
GNK-Final	3.135	0.111			
CN-Final	3.173	0.141	73	3.76	S
CNK-Final	2.761	0.103			
GN-Final	3.335	0.246	16	2.95	S
GNK-Final	2.888	0.234			
CNK-Final	2.764	0.101	73	4.35	S
GNK-Final	3.135	0.111			
CN-Final	3.086	0.238	19	1.47	NS
GN-Final	3.352	0.225			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alterations after six weeks when compared to the respective initial values.
- (ii) Coconut oil + Kernel produced lower ratio after six weeks when compared to the initial values, while with Groundnut oil + Kernel there was no alteration.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratios when compared to Coconut oil alone or Groundnut oil alone.
- (iv) Coconut oil produced similar ratio when compared to Groundnut oil, while Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel.

2.7 Subjects with total cholesterol above 230mg/100 ml

2.7.1 Serum total cholesterol

Table 31
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	257.94	5.930	18	0.28	NS
CN-Final	256.46	6.728			
CNK-Initial	252.89	6.562	18	0.14	NS
CNK-Final	253.49	7.417			
GN-Initial	248.64	8.527	3	0.47	NS
GN-Final	253.84	16.539			
GNK-Initial	252.46	8.164	16	0.06	NS
GNK-Final	252.79	8.219			
CNK-Final	258.53	7.317	16	1.02	NS
GNK-Final	252.79	8.219			
CN-Final	256.46	6.728	18	0.73	NS
CNK-Final	253.49	7.417			
GN-Final	268.91	9.633	2	1.10	NS
GNK-Final	253.33	10.929			
CN-Final	263.14	6.368	3	0.67	NS
GN-Final	253.84	16.539			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration when compared to Coconut oil alone or Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant alteration when compared to Groundnut oil or Groundnut oil + Kernel.

2.7.2 Serum HDL cholesterol

Table 32
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	46.55	2.603	18	1.24	NS
CN-Final	44.96	2.147			
CNK-Initial	44.61	3.125	18	2.58	S
CNK-Final	50.23	2.842			
GN-Initial	46.12	7.165	3	2.65	S
GN-Final	40.79	5.813			
GNK-Initial	44.44	1.996	16	0.28	NS
GNK-Final	44.01	2.424			
CNK-Final	51.67	2.948	16	3.94	S
GNK-Final	44.01	2.424			
CN-Final	44.96	2.147	18	2.15	S
CNK-Final	50.23	2.842			
GN-Final	44.89	5.825	2	1.68	NS
GNK-Final	48.28	5.920			
CN-Final	49.53	7.826	3	1.67	NS
GN-Final	40.79	5.813			

- (i) Coconut oil did not alter HDL cholesterol after six weeks when compared to the initial values, while Groundnut oil caused decrease after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after 6 weeks when compared to the initial values, while Groundnut oil + Kernel produced no significant alteration.
- (iii) Coconut oil + Kernel elevated HDL cholesterol after six weeks when compared to Coconut oil alone, while Groundnut oil + Kernel has no significant effect.
- (iv) Coconut oil after six weeks produced comparable values as Groundnut oil, while Coconut oil + Kernel caused higher value when compared to Groundnut oil + Kernel.

2.7.3 Serum LDL cholesterol

Table 33
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	172.13	9.214			
CN-Final	171.88	10.669	18	0.05	NS
CNK-Initial	169.52	10.043			
CNK-Final	165.24	9.462	18	0.80	NS
GN-Initial	182.34	8.667			
GN-Final	194.52	12.552	3	0.94	NS
GNK-Initial	167.43	9.966			
GNK-Final	167.97	9.714	16	0.12	NS
CNK-Final	167.40	10.415			
GNK-Final	167.97	9.714	16	0.11	NS
CN-Final	171.88	10.669			
CNK-Final	165.24	9.462	18	1.34	NS
GN-Final	206.03	7.091			
GNK-Final	179.46	13.155	2	2.03	S
CN-Final	192.03	12.511			
GN-Final	194.52	12.552	3	0.17	NS

- (i) Neither Coconut oil nor Groundnut oil after six weeks caused any significant alteration when compared to the respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel caused any significant alteration after 6 weeks when compared to Coconut oil alone, while Groundnut oil + Kernel caused a decrease after 6 weeks when compared to Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant alteration when compared to Groundnut oil or Groundnut oil + Kernel.

2.7.4 Serum triglycerides

Table 34
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	162.85	23.465	18	0.55	NS
CN-Final	167.42	19.471			
CNK-Initial	164.33	17.983	18	0.62	NS
CNK-Final	169.25	17.858			
GNK-Initial	175.33	17.107	16	0.23	NS
GNK-Final	178.55	17.404			
CNK-Final	174.06	19.679	16	0.46	NS
GNK-Final	178.55	17.404			
CN-Final	167.42	19.471	18	0.27	NS
CNK-Final	169.25	17.858			

- (i) Coconut oil did not produce any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel produced no significant alterations after six weeks when compared to Coconut oil alone, while Coconut oil + Kernel and Groundnut oil + Kernel produced comparable values.

2.7.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 35
LDL Cholesterol/HDL cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.947	0.321	18	0.50	NS
CN-Final	4.044	0.372			
CNK-Initial	4.178	0.409	18	2.44	S
CNK-Final	3.458	0.259			
GNK-Initial	3.924	0.334	16	0.23	NS
GNK-Final	3.960	0.282			
CN-Final	4.044	0.372	18	2.50	S
CNK-Final	3.458	0.259			
CNK-Final	3.394	0.275	16	3.66	S
GNK-Final	3.960	0.282			
CN-Final	4.284	0.935	3	0.93	NS
GN-Final	4.943	0.427			

- (i) Coconut oil caused no significant alteration after six weeks when compared to the initial value.
- (ii) Coconut oil + Kernel caused a decrease in the ratio after six weeks when compared to the initial value, while Groundnut oil + Kernel did not produced any significant difference.
- (iii) Coconut oil + Kernel caused decrease in the ratio when compared to Coconut oil alone.
- (iv) There was no significant difference in the ratio in the case Coconut oil when compared to Coconut oil + Kernel.

2.8 Vegetarians

2.8.1 Serum total cholesterol

Table 36
Total cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	198.63	12.874	5	0.67	NS
CN-Final	191.37	7.562			
CNK-Initial	177.24	5.275	28	0.56	NS
CNK-Final	178.81	5.105			
GNK-Initial	177.35	5.124	24	0.88	NS
GNK-Final	179.53	4.449			
CNK-Final	176.79	5.233	24	0.95	NS
GNK-Final	179.53	4.449			
CN-Final	191.37	7.562	5	1.60	NS
CNK-Final	178.86	9.717			

- (i) Coconut oil did not produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel caused any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel did not produced any significant alteration when compared to Groundnut oil + Kernel.
- (iv) Coconut oil + Kernel did not produced any significant alteration when compared to Coconut oil alone.

2.8.2 Serum HDL cholesterol

Table 37
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	44.15	5.146	5	0.74	NS
CN-Final	45.91	4.481			
CNK-Initial	43.27	2.163	28	0.60	NS
CNK-Final	43.74	1.864			
GNK-Initial	42.46	2.401	24	1.03	NS
GNK-Final	43.21	2.357			
CNK-Final	44.41	2.114	24	1.27	NS
GNK-Final	43.21	2.357			
CN-Final	45.91	4.481	5	0.67	NS
CNK-Final	46.91	4.324			

- (i) Coconut oil did not produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel produced similar values after six weeks when compared to Groundnut oil + Kernel.
- (iv) Coconut oil + Kernel did not produced any significant alteration when compared to Coconut oil alone.

2.8.3 Serum LDL cholesterol

Table 38
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	129.45	11.988	5	0.90	NS
CN-Final	119.76	6.697			
CNK-Initial	112.60	4.60	28	1.49	NS
CNK-Final	104.21	4.82			
GNK-Initial	111.38	4.206	24	0.64	NS
GNK-Final	112.73	3.824			
CNK-Final	107.11	5.179	24	1.19	NS
GNK-Final	112.73	3.824			
CN-Final	119.76	6.697	5	1.25	NS
CNK-Final	107.93	7.465			

- (i) Coconut oil did not produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel caused any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel produced similar values when compared to Groundnut oil + Kernel.
- (iv) Coconut oil + Kernel did not produced any significant alteration when compared to Coconut oil alone.

2.8.4 Serum triglycerides

Table 39
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	125.12	30.781	5	0.44	NS
CN-Final	129.07	28.491			
CNK-Initial	106.67	11.642	28	0.35	NS
CNK-Final	104.62	9.890			
GNK-Initial	117.61	12.936	24	0.10	NS
GNK-Final	118.13	11.069			
CNK-Final	106.30	10.970	24	1.96	S
GNK-Final	118.13	11.069			
CN-Final	129.07	28.491	5	0.66	NS
CNK-Final	120.15	24.488			

- (i) Coconut oil, Coconut oil + Kernel and Groundnut oil + Kernel did not produced any significant alteration after six weeks when compared to the respective initial values.
- (ii) Coconut oil + Kernel produced a decrease when compared to Groundnut oil + Kernel.
- (iii) Coconut oil + Kernel produced no significant alteraiton when compared to Coconut oil alone.

2.8.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 40
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.277	0.634	5	1.58	NS
CN-Final	2.738	0.325			
CNK-Initial	2.819	0.205	28	1.83	S
CNK-Final	2.542	0.181			
GNK-Initial	2.880	0.220	24	0.48	NS
GNK-Final	2.845	0.221			
CN-Final	2.738	0.325	5	1.10	NS
CNK-Final	2.451	0.366			
CNK-Final	2.597	0.203	24	1.76	S
GNK-Final	2.845	0.211			

- (i) Coconut oil did not produce any alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced a decrease after six weeks when compared to the initial values, while Groundnut oil + Kernel after six weeks caused no significant alteration.
- (iii) Coconut oil + Kernel did not affect the ratio when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel.

2.9 Nonvegetarians (fishermen community excluded)

2.9.1 Serum total cholesterol

Table 41
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	191.54	2.498	179	1.35	NS
CN-Final	193.26	2.634			
CNK-Initial	191.37	2.549	207	0.86	NS
CNK-Final	190.24	2.649			
GN-Initial	183.67	3.930	71	1.32	NS
GN-Final	180.91	4.181			
GNK-Initial	190.61	2.812	153	1.70	S
GNK-Final	192.96	2.906			
CNK-Final	192.43	3.183	153	0.31	NS
GNK-Final	192.95	2.906			
CN-Final	193.28	2.648	178	2.04	S
CNK-Final	190.30	2.869			
GN-Final	180.28	4.737	59	0.50	NS
GNK-Final	181.70	4.385			
CN-Final	185.33	3.763	71	1.75	S
GN-Final	180.91	4.181			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in total cholesterol after six weeks when compared to the respective initial values
- (ii) Coconut oil + Kernel caused no alteration after six weeks when compared to the initial values, while Groundnut oil + Kernel produced an increase after six weeks.
- (iii) Coconut oil + Kernel caused a decrease when compared to Coconut oil alone, while Groundnut oil + Kernel caused no significant alteration when compared to Groundnut oil alone.
- (iv) Coconut oil produced higher cholesterol when compared to Groundnut oil, while there was no significant difference with Coconut oil + Kernel and Groundnut oil + Kernel.

2.9.2 Serum HDL cholesterol

Table 42
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	45.86	0.704			
CN-Final	46.76	0.710	179	1.57	NS
CNK-Initial	47.06	0.715			
CNK-Final	48.63	0.733	207	2.78	S
GN-Initial	45.22	1.235			
GN-Final	43.28	1.044	71	2.48	S
GNK-Initial	44.49	0.728			
GNK-Final	44.96	0.668	152	0.84	NS
CNK-Final	49.12	0.833			
GNK-Final	44.96	0.668	152	6.17	S
CN-Final	46.80	0.712			
CNK-Final	48.43	0.792	178	2.01	S
GN-Final	44.33	1.070			
GNK-Final	47.60	0.936	59	3.06	S
CN-Final	46.95	0.894			
GN-Final	43.28	1.044	71	3.94	S

- (i) Coconut oil after six weeks caused no significant alteration when compared to the initial level, while Groundnut oil after six weeks caused a decrease.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to the initial value, while Groundnut oil + Kernel caused no significant alteration after six weeks.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel caused increase when compared to Coconut oil and Groundnut oil alone.
- (iv) Coconut oil and Coconut oil + Kernel produced higher HDL cholesterol when compared to Groundnut oil or Groundnut oil + Kernel.

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2.9.3 Serum LDL cholesterol

Table 43
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	124.53	2.320	179	1.51	NS
CN-Final	126.53	2.548			
CNK-Initial	122.88	2.304	207	1.34	NS
CNK-Final	121.01	2.332			
GN-Initial	119.02	3.663	71	0.08	NS
GN-Final	119.19	3.761			
GNK-Initial	123.81	2.537	153	0.59	NS
GNK-Final	124.61	2.687			
CNK-Final	122.86	2.824	153	1.02	NS
GNK-Final	124.61	2.687			
CN-Final	126.52	2.563	178	3.47	S
CNK-Final	120.92	2.545			
GN-Final	119.06	4.329	59	1.30	NS
GNK-Final	115.68	3.998			
CN-Final	121.76	3.529	71	1.04	NS
GN-Final	119.19	3.761			

- (i) Neither Coconut oil nor Groundnut oil caused any significant alteration after six weeks when compared to the respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the respective initial values.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil and Coconut oil + Kernel produced similar values when compared to Groundnut oil and Groundnut oil + Kernel.

2.9.4 Serum triglycerides

Table 44
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	109.62	4.493	179	2.89	S
CN-Final	102.86	4.316			
CNK-Initial	106.33	4.264	207	0.09	NS
CNK-Final	106.54	3.926			
GN-Initial	98.22	5.115	71	0.74	NS
GN-Final	95.56	5.657			
GNK-Initial	110.35	4.880	153	1.76	S
GNK-Final	115.05	5.206			
CNK-Final	108.13	4.689	153	2.56	S
GNK-Final	115.05	5.206			
CN-Final	102.76	4.339	178	2.84	S
CNK-Final	109.05	4.270			
GN-Final	88.88	4.836	59	0.69	NS
GNK-Final	91.28	4.707			
CN-Final	87.05	4.481	71	2.70	S
GN-Final	95.56	5.657			

- (i) Coconut oil produced lower triglycerides after six weeks when compared to the initial value, while Groundnut oil after six weeks had no significant effect.
- (ii) Coconut oil + Kernel caused no significant alteration after six weeks when compared to the initial values, while Groundnut oil + Kernel caused an increase after six weeks.
- (iii) Coconut oil + Kernel produced higher triglycerides when compared to Coconut oil alone, while there was no significant alteration in the case of Groundnut oil + Kernel when compared to Groundnut oil alone.
- (iv) Coconut oil produced lower triglycerides when compared to Groundnut oil. Similar was the case with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.9.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 45
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.856	0.076	179	0.04	NS
CN-Final	2.854	0.084			
CNK-Initial	2.768	0.076	207	2.95	S
CNK-Final	2.598	0.062			
GN-Initial	2.802	0.124	71	0.90	NS
GN-Final	2.878	0.116			
GNK-Initial	2.931	0.084	152	0.73	NS
GNK-Final	2.894	0.083			
CN-Final	2.851	0.084	178	3.75	S
CNK-Final	2.608	0.068			
GN-Final	2.777	0.117	59	3.35	S
GNK-Final	2.503	0.109			
CNK-Final	2.609	0.071	152	4.55	S
GNK-Final	2.894	0.083			
CN-Final	2.668	0.102	71	2.68	S
GN-Final	2.878	0.116			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced lower ratio after six weeks when compared to the initial value, while there was no significant difference with Groundnut oil + Kernel.
- (iii) The ratio was lower with Coconut oil + Kernel and Groundnut oil + Kernel after six weeks when compared to Coconut oil or Groundnut oil alone.
- (iv) Coconut oil and Coconut oil + Kernel produced lower ratio when compared to Groundnut oil and Groundnut oil + Kernel.

2.10 Fishermen community

2.10.1 Serum total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides and LDL cholesterol/HDL cholesterol ratio

Table 46
Total Cholesterol, HDL Cholesterol, LDL Cholesterol
Triglycerides (mgs/100 ml serum) and LDL
Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
	Total Cholesterol				
CN-Initial	159.58	5.578	19	0.10	NS
CN-Final	159.83	5.681			
	HDL Cholesterol				
CN-Initial	45.05	2.678	19	0.83	NS
CN-Final	44.14	2.534			
	LDL Cholesterol				
CN-Initial	100.17	4.109	19	1.15	NS
CN-Final	102.84	3.961			
	Triglycerides				
CN-Initial	71.77	4.016	19	3.03	S
CN-Final	59.63	4.196			
	LDL Chl/HDL Chl ratio				
CN-Initial	2.325	0.121	19	1.45	NS
CN-Final	2.426	0.120			

- (i) Total Cholesterol, HDL cholesterol, LDL Cholesterol, LDL Cholesterol/HDL Cholesterol ratio were not significantly different after six weeks on Coconut oil when compared to the initial values.
- (ii) Coconut oil caused significant decrease in triglyceride level after 6 weeks when compared to the initial level.

2.11 Daily meat/beef consuming volunteers

2.11.1 Serum total cholesterol

Table 47
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	213.85	6.517	33	1.61	NS
CN-Final	208.99	6.360			
CNK-Initial	210.43	6.485	32	0.40	NS
CNK-Final	208.91	6.380			
GNK-Initial	206.65	6.112	30	3.99	S
GNK-Final	218.83	6.647			
CNK-Final	209.48	6.784	30	3.36	S
GNK-Final	218.83	6.647			
CN-Final	209.54	6.531	32	0.18	NS
CNK-Final	208.91	6.380			

- (i) Coconut oil after six weeks produced no significant alteration when compared to the initial level.
- (ii) Coconut oil + Kernel after six weeks produced no significant alteration when compared to the initial values, while Groundnut oil + Kernel caused an increase.
- (iii) Coconut oil + Kernel produced no significant alteration when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel produced lower total cholesterol after six weeks when compared to Groundnut oil + Kernel

2.11.2 Serum HDL cholesterol

Table 48
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	46.00	1.690	33	2.51	S
CN-Final	43.34	1.677			
CNK-Initial	46.48	2.286	32	3.19	S
CNK-Final	50.71	2.285			
GNK-Initial	43.07	1.973	29	0.74	NS
GNK-Final	43.81	1.800			
CNK-Final	50.17	2.405	29	4.56	S
GNK-Final	43.81	1.800			
CN-Final	43.49	1.722	32	4.67	S
CNK-Final	50.71	2.285			

- (i) Coconut oil after six weeks caused decrease in HDL cholesterol when compared to the initial values.
- (ii) Coconut oil + Kernel caused an increase in HDL cholesterol after 6 weeks when compared to the initial value, while Groundnut oil + Kernel caused no significant alteration after six weeks.
- (iii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to Groundnut oil + Kernel.

2.11.3 Serum LDL cholesterol

Table 49
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	141.73	6.088	33	1.32	NS
CN-Final	137.60	6.287			
CNK-Initial	134.90	5.945	32	1.28	NS
CNK-Final	128.91	5.931			
GNK-Initial	133.36	5.570	30	4.45	S
GNK-Final	145.47	6.103			
CNK-Final	129.48	6.274	30	4.82	S
GNK-Final	145.47	6.103			
CN-Final	137.88	6.474	32	2.34	S
CNK-Final	128.91	5.931			

- (i) Coconut oil caused no significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel caused no significant alteration after six weeks when compared to the initial values, while Groundnut oil + Kernel caused an increase after six weeks.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Groundnut oil + Kernel.

2.11.4 Serum triglycerides

Table 50
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	138.16	13.364	33	0.10	NS
CN-Final	138.86	13.077			
CNK-Initial	133.87	13.289	32	2.06	S
CNK-Final	148.44	12.815			
GNK-Initial	144.31	13.270	30	0.45	NS
GNK-Final	148.03	13.989			
CNK-Final	150.64	13.546	30	0.33	NS
GNK-Final	148.03	13.989			
CN-Final	139.39	13.468	32	1.28	NS
CNK-Final	148.44	12.815			

- (i) Coconut oil produced no significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced significant increase after 6 weeks when compared to the initial values, while Groundnut oil + Kernel produced no significant alteration after six weeks.
- (iii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel and Groundnut oil + Kernel produced comparable values after six weeks.

2.11.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 51
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.221	0.180	33	1.08	NS
CN-Final	3.329	0.190			
CNK-Initial	3.160	0.217	32	2.49	S
CNK-Final	2.702	0.171			
GNK-Initial	3.373	0.214	29	1.62	NS
GNK-Final	3.539	0.209			
CN-Final	3.329	0.200	32	5.63	S
CNK-Final	2.702	0.171			
CNK-Final	2.791	0.172	29	4.79	S
GNK-Final	3.539	0.209			

- (i) Coconut oil produced no significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced significant decrease after six weeks when compared to the initial values, while Groundnut oil + Kernel produced no significant alteration.
- (iii) Coconut oil + Kernel produced lower ratio after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel produced lower ratio after six weeks when compared to Groundnut oil + Kernel.

2.12 Volunteers with triglycerides below 70 mg/100 ml

2.12.1 Serum total cholesterol

Table 52
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	164.82	3.318	43	1.17	NS
CN-Final	167.47	3.577			
CNK-Initial	169.38	4.716	37	1.01	NS
CNK-Final	166.67	4.247			
GN-Initial	164.56	5.092	24	1.20	NS
GN-Final	160.12	4.246			
GNK-Initial	166.97	4.191	33	1.08	NS
GNK-Final	169.93	4.524			
CNK-Final	169.05	4.543	33	0.28	NS
GNK-Final	169.93	4.524			
CN-Final	168.61	4.018	37	0.64	NS
CNK-Final	166.67	4.247			
GN-Final	161.90	4.421	22	0.18	NS
GNK-Final	162.80	5.549			
CN-Final	165.87	4.999	24	1.30	NS
GN-Final	160.12	4.246			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial levels
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to Coconut oil or Groundnut oil alone.
- (iv) Coconut oil produced no significant alteration after six weeks when compared to Groundnut oil. Similar results were obtained with Coconut oil + Kernel and Groundnut oil + Kernel.

2.12.2 Serum HDL cholesterol

Table 53
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	49.00 47.48	1.470 1.408	43	1.38	NS
CNK-Initial CNK-Final	49.41 50.83	1.752 1.848	37	0.90	NS
GN-Initial GN-Final	45.80 43.24	1.877 1.555	24	2.14	S
GNK-Initial GNK-Final	45.37 46.64	1.310 1.299	33	0.97	NS
CNK-Final GNK-Final	51.85 46.64	1.954 1.299	33	3.49	S
CN-Final CNK-Final	47.37 50.83	1.451 1.848	37	1.72	S
GN-Final GNK-Final	43.57 46.94	1.675 1.545	22	2.22	S
CN-Final GN-Final	45.28 43.24	1.960 1.555	24	1.58	NS

- (i) Coconut oil after six weeks produced no significant alteration when compared to the initial level, but Groundnut oil after six weeks caused a decrease.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteation after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced higher HDL cholesterol after six weeks when compared to Coconut oil alone or Groundnut oil alone.
- (iv) Coconut oil and Groundnut oil produced comparable levels after six weeks, while Coconut oil + Kernel produced higher HDL Cholesterol when compared to Groundnut oil + Kernel.

2.12.3 Serum LDL cholesterol

Table 54
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	107.12	4.260	43	1.21	NS
CN-Final	109.53	4.336			
CNK-Initial	108.58	5.142	37	1.21	NS
CNK-Final	104.88	4.553			
GN-Initial	104.39	4.722	24	0.03	NS
GN-Final	104.49	4.181			
GNK-Initial	110.68	4.890	33	0.34	NS
GNK-Final	109.84	5.316			
CNK-Final	106.57	5.003	33	1.05	NS
GNK-Final	109.84	5.316			
CN-Final	111.00	4.872	37	2.17	S
CNK-Final	104.88	4.553			
GN-Final	106.10	4.385	22	1.01	NS
GNK-Final	101.73	5.677			
CN-Final	108.38	4.817	24	0.89	NS
GN-Final	104.49	4.181			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel and Groundnut oil + Kernel also produced no significant alteration after 6 weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced lower values when compared to Coconut oil alone, while Groundnut oil + Kernel produced no significant alteration when compared to Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant alteration when compared to Groundnut oil or Groundnut oil + Kernel.

2.12.4 Serum triglycerides

Table 55
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	56.38	1.569	43	0.92	NS
CN-Final	58.67	2.214			
CNK-Initial	64.60	3.427	37	0.80	NS
CNK-Final	62.22	2.884			
GN-Initial	72.07	3.281	24	0.46	NS
GN-Final	69.94	4.378			
GNK-Initial	62.63	3.722	33	1.80	S
GNK-Final	68.39	2.995			
CNK-Final	61.42	3.142	33	2.18	S
GNK-Final	68.39	2.995			
CN-Final	60.92	2.343	37	0.41	NS
CNK-Final	92.22	2.884			
GN-Final	69.87	4.760	22	1.01	NS
GNK-Final	66.34	2.675			
CN-Final	63.02	2.999	24	1.78	S
GN-Final	69.94	4.378			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to the initial value, while Groundnut oil + Kernel produced an increase.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to Coconut oil alone or Groundnut oil alone respectively.
- (iv) Coconut oil produced lower triglycerides after six weeks when compared to Groundnut oil. Similar results were obtained with Coconut oil + Kernel and Groundnut oil + Kernel, former producing lower levels.

2.12.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 56
LDL Cholesterol/HDL cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.290	0.132	43	1.59	NS
CN-Final	2.390	0.125			
CNK-Initial	2.337	0.161	37	1.35	NS
CNK-Final	2.172	0.123			
GN-Initial	2.386	0.164	24	1.22	NS
GN-Final	2.520	0.158			
GNK-Initial	2.529	0.149	33	0.77	NS
GNK-Final	2.457	0.173			
CN-Final	2.411	0.134	37	2.46	S
CNK-Final	2.172	0.123			
GN-Final	2.550	0.170	22	2.30	S
GNK-Final	2.238	0.167			
CNK-Final	2.169	0.136	33	2.91	S
GNK-Final	2.457	0.173			
CN-Final	2.423	0.120	24	0.77	NS
GN-Final	2.520	0.158			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in the ratio after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel and Groundnut oil + Kernel also produced no significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratio after six weeks when compared to Coconut oil alone and Groundnut oil alone respectively.
- (iv) Coconut oil produced values similar to Groundnut oil after six weeks, while Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel.

2.13 Volunteers with triglycerides above 180 mg/100 ml

2.13.1 Serum total cholesterol

Table 57
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	216.52	5.732			
CN-Final	210.65	5.614	23	1.52	NS
CNK-Initial	213.10	5.288			
CNK-Final	210.69	5.507	23	0.60	NS
GN-Initial	213.82	7.422			
GN-Final	215.12	5.719	4	0.29	NS
GNK-Initial	208.78	6.437			
GNK-Final	211.99	6.517	19	0.75	NS
CNK-Final	213.00	6.409			
GNK-Final	211.99	6.517	19	0.23	NS
CN-Final	210.65	5.614			
CNK-Final	210.69	5.507	23	0.01	NS
CN-Final	208.28	3.226			
GN-Final	215.12	5.719	4	0.95	NS

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial levels.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel caused any significant difference when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.13.2 Serum HDL cholesterol

Table 58
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	40.24	1.633			
CN-Final	42.50	1.497	23	1.54	NS
CNK-Initial	39.43	1.814			
CNK-Final	42.62	1.826	23	1.56	NS
GN-Initial	35.46	4.133			
GN-Final	36.66	4.559	4	0.65	NS
GNK-Initial	39.92	1.674			
GNK-Final	39.66	1.560	19	0.21	NS
CNK-Final	43.90	1.902			
GNK-Final	39.66	1.560	19	2.26	S
CN-Final	42.50	1.497			
CNK-Final	42.62	1.826	23	0.06	NS
CN-Final	40.24	1.733			
GN-Final	36.66	4.559	4	0.94	NS

- (i) Neither Coconut oil nor Groundnut oil caused any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced significant increase after six weeks when compared to Groundnut oil + Kernel.
- (iv) Coconut oil produced comparable values after six weeks when compared to Groundnut oil and Coconut oil + Kernel.

2.13.3 Serum LDL cholesterol

Table 59
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	131.42	4.846	23	1.03	NS
CN-Final	126.81	5.918			
CNK-Initial	125.27	4.940	23	0.17	NS
CNK-Final	124.62	4.989			
GN-Initial	137.31	4.668	4	0.32	NS
GN-Final	136.66	4.657			
GNK-Initial	121.04	5.226	19	0.57	NS
GNK-Final	123.27	6.326			
CNK-Final	125.25	5.855	19	0.43	NS
GNK-Final	123.27	6.326			
CN-Final	126.81	5.918	23	0.45	NS
CNK-Final	124.62	4.989			
CN-Final	144.00	14.143	4	0.48	NS
GN-Final	136.66	4.657			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone
- (iv) Coconut oil and Coconut oil + Kernel produced comparable values after six weeks when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.13.4 Serum triglycerides

Table 60
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	237.94	12.543	23	3.02	S
CN-Final	207.32	15.267			
CNK-Initial	221.67	16.591	23	0.69	NS
CNK-Final	214.03	12.533			
GN-Initial	205.25	29.68	4	0.41	NS
GN-Final	216.08	32.06			
GNK-Initial	228.46	12.967	19	0.54	NS
GNK-Final	237.19	17.213			
CNK-Final	215.40	14.627	19	1.74	S
GNK-Final	237.19	17.213			
CN-Final	207.32	15.267	23	0.77	NS
CNK-Final	214.03	12.533			
CN-Final	180.19	22.764	4	2.32	S
GN-Final	216.08	32.061			

- (i) Coconut oil produced significantly lower triglycerides after six weeks when compared to the initial values, while Groundnut oil after six weeks produced no significant alteration.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil produced significantly lower triglycerides when compared to Groundnut oil. Similar was the case with Coconut oil + Kernel when compared to Groundnut oil + Kernel.

2.13.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 61
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.444	0.231	23	1.95	S
CN-Final	3.083	0.186			
CNK-Initial	3.323	0.193	23	1.42	NS
CNK-Final	3.034	0.164			
GN-Initial	4.048	0.392	4	0.60	NS
GN-Final	3.923	0.413			
GNK-Initial	3.153	0.200	19	0.22	NS
GNK-Final	3.181	0.193			
CN-Final	3.083	0.186	23	0.26	NS
CNK-Final	3.034	0.164			
CNK-Final	2.928	0.159	19	1.49	NS
GNK-Final	3.181	0.193			
CN-Final	3.613	0.407	4	1.24	NS
GN-Final	3.923	0.413			

- (i) Coconut oil after six weeks caused a significant decrease in the ratio when compared to the initial value, while Groundnut oil after six weeks caused no significant alteration.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel caused any significant alteration in the ratio after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel caused no significant alteration after six weeks when compared to Coconut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel caused any significant alteration when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.14 Volunteers with caloric intake less than 2000 K.calories

2.14.1 Serum total cholesterol

Table 62
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	184.30	3.554	93	1.65	NS
CN-Final	186.92	3.410			
CNK-Initial	186.83	5.212	110	0.65	NS
CNK-Final	185.67	5.183			
GN-Initial	177.31	5.212	31	1.45	NS
GN-Final	173.03	5.183			
GNK-Initial	181.49	3.442	78	0.73	NS
GNK-Final	185.11	3.372			
CNK-Final	183.56	3.849	78	2.26	S
GNK-Final	185.11	3.372			
CN-Final	191.01	3.608	80	2.90	S
CNK-Final	184.91	3.714			
GN-Final	166.77	5.575	25	1.40	NS
GNK-Final	172.94	4.763			
CN-Final	183.91	4.252	31	2.66	S
GN-Final	173.03	5.183			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel did not produce any alteration after six weeks when compared to the initial value, but Groundnut oil + Kernel produced an increase.
- (iii) Coconut oil + Kernel produced a decrease after 6 weeks when compared to Coconut oil alone, while Groundnut oil + Kernel did not produce any alteration when compared to Groundnut oil.
- (iv) Coconut oil produced an increase after six weeks when compared to Groundnut oil.

2.14.2 Serum HDL cholesterol

Table 63
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	46.88	1.013	93	1.59	NS
CN-Final	47.77	1.045			
CNK-Initial	46.62	1.006	110	3.47	S
CNK-Final	49.19	1.004			
GN-Initial	44.43	1.714	31	1.78	S
GN-Final	42.41	1.444			
GNK-Initial	45.16	0.019	78	1.02	NS
GNK-Final	45.89	0.900			
CNK-Final	50.07	1.105	78	5.18	S
GNK-Final	45.89	0.990			
CN-Final	48.29	1.098	80	1.93	S
CNK-Final	50.42	1.119			
GN-Final	42.74	1.390	25	3.29	S
GNK-Final	47.81	1.427			
CN-Final	46.84	1.382	31	3.38	S
GN-Final	42.41	1.444			

- (i) Coconut oil after six weeks did not produce any significant alteration when compared to the initial value, while Groundnut oil produced a decrease.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to the initial value, while there was no alteration in the case of Groundnut oil + Kernel after six weeks.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel produced higher HDL cholesterol when compared to Coconut oil alone and Groundnut oil alone.
- (iv) Coconut oil produced higher HDL cholesterol when compared to Groundnut oil. Similar results were obtained with Coconut oil + Kernel compared to Groundnut oil + Kernel.

2.14.3 Serum LDL cholesterol

Table 64
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	116.09	2.868			
CN-Final	119.56	2.849	93	2.13	S
CNK-Initial	119.14	2.702			
CNK-Final	114.48	2.527	110	2.24	S
GN-Initial	113.73	4.792			
GN-Final	113.14	4.384	31	0.22	NS
GNK-Initial	115.50	2.669			
GNK-Final	116.63	2.927	78	0.75	NS
CNK-Final	112.85	2.862			
GNK-Final	116.63	2.927	78	1.76	S
CN-Final	122.07	3.138			
CNK-Final	113.52	2.797	80	3.75	S
GN-Final	108.80	4.846			
GNK-Final	109.60	4.904	25	0.22	NS
CN-Final	120.39	3.786			
GN-Final	113.14	4.384	31	2.25	S

- (i) Coconut oil after six weeks increased LDL cholesterol when compared to initial values, while Groundnut oil after six weeks caused no significant alteration.
- (ii) Coconut oil + Kernel decreased LDL cholesterol after six weeks when compared to the initial values, while there was no significant difference in the case of Groundnut oil + Kernel after six weeks.
- (iii) Coconut oil + Kernel produced lower LDL cholesterol after six weeks when compared to Coconut oil alone, while Groundnut oil + Kernel produced no alteration when compared to Groundnut oil alone.
- (iv) Coconut oil produced higher LDL cholesterol after six weeks when compared to Groundnut oil, while Coconut oil + Kernel produced lower values when compared to Groundnut oil + Kernel.

2.14.4 Serum triglycerides

Table 65
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	100.32	5.432			
CN-Final	92.01	5.477	93	3.10	S
CNK-Initial	104.49	6.009			
CNK-Final	104.28	5.446	110	0.08	NS
GN-Initial	95.96	8.316			
GN-Final	88.91	9.904	31	1.35	NS
GNK-Initial	100.44	7.534			
GNK-Final	100.84	6.533	67	0.10	NS
CNK-Final	102.75	7.070			
GNK-Final	100.84	6.533	67	0.59	NS
CN-Final	97.50	6.114			
CNK-Final	103.85	6.229	80	2.20	S
GN-Final	78.12	7.126			
GNK-Final	79.07	6.068	25	0.27	NS
CN-Final	82.35	7.448			
GN-Final	88.91	9.904	31	1.59	NS

- (i) Coconut oil produced lower triglycerides after six weeks when compared to the initial value, while Groundnut oil produced no significant alteration after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced higher triglycerides after six weeks when compared to Coconut oil alone, while with Groundnut oil + Kernel, there was no significant alteration when compared to Groundnut oil alone.
- (iv) Coconut oil and Groundnut oil produced comparable levels after six weeks. Coconut oil + Kernel and Groundnut oil + Kernel also produced comparable values.

2.14.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 66
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.622	0.096			
CN-Final	2.607	0.080	93	0.24	NS
CNK-Initial	2.691	0.090			
CNK-Final	2.418	0.070	110	3.73	S
GN-Initial	2.706	0.177			
GN-Final	2.786	0.167	31	0.73	NS
GNK-Initial	2.675	0.095			
GNK-Final	2.671	0.107	78	0.07	NS
CN-Final	2.635	0.090			
CNK-Final	2.329	0.076	80	3.78	S
GN-Final	2.6128	0.149			
GNK-Final	2.372	0.153	25	2.13	S
CNK-Final	2.323	0.072			
GNK-Final	2.671	0.107	78	4.21	S
CN-Final	2.638	0.114			
GN-Final	2.786	0.167	31	1.37	NS

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced lower ratio after six weeks when compared to the initial values, while with Groundnut oil + Kernel after six weeks there was no significant alteration.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratio after six weeks when compared to Coconut oil alone and Groundnut oil alone respectively.
- (iv) Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel, while Coconut oil produced no significant alteration when compared to Groundnut oil.

2.15 Volunteers with caloric intake above 2000 K.calories

2.15.1 Serum total cholesterol

Table 67
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	192.29	3.147	111	0.13	NS
CN-Final	192.52	3.524			
CNK-Initial	192.38	3.319	124	0.68	NS
CNK-Final	191.28	3.542			
GN-Initial	188.76	5.644	39	0.53	NS
GN-Final	187.22	6.157			
GNK-Initial	195.02	3.557	98	0.64	NS
GNK-Final	196.20	3.772			
CNK-Final	195.99	4.069	98	0.10	NS
GNK-Final	196.20	3.772			
CN-Final	194.93	3.617	103	0.57	NS
CNK-Final	193.84	4.017			
GN-Final	190.61	6.732	33	0.59	NS
GNK-Final	188.40	6.662			
CN-Final	186.47	5.902	39	0.25	NS
GN-Final	187.22	6.157			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone and Groundnut oil alone respectively.
- (iv) Coconut oil and Coconut oil + Kernel produced no significant alteration when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.15.2 Serum HDL cholesterol

Table 68
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	45.02	0.915	111	0.52	NS
CN-Final	45.39	0.877			
CNK-Initial	46.69	0.938	124	0.64	NS
CNK-Final	47.12	0.943			
GN-Initial	45.85	1.762	39	1.72	S
GN-Final	43.97	1.490			
GNK-Initial	43.57	0.983	97	0.45	NS
GNK-Final	43.89	0.885			
CNK-Final	47.32	1.085	97	3.94	S
GNK-Final	43.89	0.885			
CN-Final	45.60	0.897	103	1.09	NS
CNK-Final	46.80	1.050			
GN-Final	45.54	1.545	33	1.31	NS
GNK-Final	47.44	1.257			
CN-Final	47.03	1.184	39	2.33	S
GN-Final	43.97	1.490			

- (i) Coconut oil did not produce any significant alteration in HDL cholesterol after six weeks when compared to the initial values, while there was a decrease with Groundnut oil after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to Coconut oil alone and Groundnut oil alone respectively.
- (iv) Coconut oil and Coconut oil + Kernel produced higher HDL cholesterol when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.15.3 Serum LDL cholesterol

Table 69
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	127.52	3.062	111	0.15	NS
CN-Final	127.78	3.500			
CNK-Initial	123.87	3.191	124	0.42	NS
CNK-Final	123.06	3.386			
GN-Initial	123.25	5.323	39	0.23	NS
GN-Final	124.03	5.725			
GNK-Initial	127.60	3.435	98	0.31	NS
GNK-Final	128.16	3.561			
CNK-Final	127.07	3.926	98	0.45	NS
GNK-Final	128.16	3.561			
CN-Final	129.59	3.672	103	1.67	S
CNK-Final	125.94	3.758			
GN-Final	126.90	6.420	33	1.84	S
GNK-Final	120.32	5.915			
CN-Final	122.86	5.623	39	0.33	NS
GN-Final	124.03	5.725			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Both Coconut oil + Kernel and Groundnut oil + Kernel produced lower LDL cholesterol when compared to Coconut oil alone and Groundnut oil alone.
- (iv) Both Coconut oil and Coconut oil + Kernel produced no significant alteration after six weeks when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.15.4 Serum triglycerides

Table 70
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	111.49	6.007	111	1.86	S
CN-Final	105.66	5.663			
CNK-Initial	108.45	5.380	124	0.04	NS
CNK-Final	108.34	4.945			
GN-Initial	100.04	6.447	39	0.17	NS
GN-Final	100.88	6.392			
GNK-Initial	120.22	6.257	93	1.72	S
GNK-Final	126.24	7.113			
CNK-Final	114.34	6.097	93	3.13	S
GNK-Final	126.24	7.113			
CN-Final	108.37	5.962	103	1.69	S
CNK-Final	113.73	5.665			
GN-Final	97.11	6.295	33	0.63	NS
GNK-Final	100.62	6.517			
CN-Final	90.82	5.450	39	2.17	S
GN-Final	100.88	6.392			

- (i) Coconut oil after six weeks lowered triglycerides when compared to the intial value, while with Groundnut oil there was no significant effect.
- (ii) Coconut oil + Kernel after six weeks produced no significant alteration when compared to the initial values, while with Groundnut oil + Kernel, there was an increase after six weeks.
- (iii) Coconut oil + Kernel produced higher triglycerides when compared to Coconut oil alone, while Groundnut oil + Kernel produced no significant alteration when compared to Groundnut oil alone.
- (iv) Coconut oil and Coconut oil + Kernel produced lower triglycerides when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.15.5 Serum LDL cholesterol ratio

Table 71
LDL Cholesterol/HDL cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.980	0.100	111	0.02	NS
CN-Final	2.979	0.119			
CNK-Initial	2.842	0.108	124	1.29	NS
CNK-Final	2.741	0.090			
GN-Initial	2.878	0.174	39	0.58	NS
GN-Final	2.951	0.161			
GNK-Initial	3.123	0.116	97	0.97	NS
GNK-Final	3.058	0.107			
CN-Final	3.014	0.126	103	2.11	S
CNK-Final	2.816	0.098			
GN-Final	2.902	0.171	33	2.56	S
GNK-Final	2.603	0.151			
CNK-Final	2.831	0.101	97	2.85	S
GNK-Final	3.058	0.107			
CN-Final	2.691	0.160	39	2.32	S
GN-Final	2.951	0.161			

- (i) Neither Coconut oil nor Groundnut oil caused any significant alteration in the ratio after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratio when compared to Coconut oil alone and Groundnut oil alone.
- (iv) Coconut oil and Coconut oil + Kernel produced lower ratios when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.16 Volunteers with fat intake 10–15% (low fat)

2.16.1 Serum total cholesterol

Table 72
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	192.25	3.843	78	0.36	NS
CN-Final	192.94	4.099			
CNK-Initial	191.36	3.945	80	0.04	NS
CNK-Final	191.29	4.301			
GN-Initial	191.52	5.567	29	1.56	NS
GN-Final	186.81	6.255			
GNK-Initial	194.63	4.609	59	0.39	NS
GNK-Final	195.61	4.894			
CNK-Final	195.51	5.294	59	0.03	NS
GNK-Final	195.61	4.894			
CN-Final	197.15	4.090	70	2.25	S
CNK-Final	192.16	4.724			
GN-Final	190.23	7.003	22	1.43	NS
GNK-Final	184.96	7.354			
CN-Final	188.66	5.865	29	0.59	NS
GN-Final	186.81	6.255			

- (i) Neither Coconut oil nor Groundnut oil caused any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel and Groundnut oil + Kernel did not cause any significant difference after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced significant decrease after six weeks when compared to Coconut oil alone, while Groundnut oil + Kernel produced no significant alteration when compared to Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel caused any significant alteration when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.16.2 Serum HDL cholesterol

Table 73
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	44.37	1.003	78	1.40	NS
CN-Final	45.50	0.995			
CNK-Initial	45.15	0.952	80	0.79	NS
CNK-Final	45.87	1.192			
GN-Initial	44.94	2.166	29	2.49	S
GN-Final	42.15	1.757			
GNK-Initial	43.20	1.135	58	0.50	NS
GNK-Final	43.68	1.094			
CNK-Final	46.50	1.441	58	2.49	S
GNK-Final	43.68	1.094			
CN-Final	46.37	1.019	70	0.46	NS
CNK-Final	45.76	1.288			
GN-Final	44.57	1.915	22	1.73	S
GNK-Final	47.55	1.530			
CN-Final	46.59	1.140	29	3.17	S
GN-Final	42.15	1.757			

- (i) Coconut oil did not cause any significant alteration after six weeks when compared to the initial value, while Groundnut oil produced significant decrease after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to Coconut oil alone, while Groundnut oil + Kernel produced significant increase when compared to Groundnut oil alone.
- (iv) Coconut oil + Kernel and Coconut oil caused significant increase after six weeks when compared to Groundnut oil + Kernel and Groundnut oil respectively.

2.16.3 Serum LDL cholesterol

Table 74
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	127.17	3.530	78	0.44	NS
CN-Final	128.10	3.878			
CNK-Initial	125.09	3.729	80	0.01	NS
CNK-Final	125.07	3.981			
GN-Initial	125.98	5.749	29	0.84	NS
GN-Final	123.34	6.080			
GNK-Initial	129.09	4.341	59	0.14	NS
GNK-Final	128.75	4.440			
CNK-Final	128.94	4.917	59	0.06	NS
GNK-Final	128.75	4.440			
CN-Final	130.89	4.098	70	1.88	S
CNK-Final	125.70	4.382			
GN-Final	127.34	7.348	22	2.40	S
GNK-Final	118.91	7.008			
CN-Final	124.84	6.209	29	0.40	NS
GN-Final	123.34	6.080			

- (i) Coconut oil and Groundnut oil caused no significant alteration after six weeks when compared to the respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when the initial and final values were compared.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel caused significant decrease after six weeks when compared to Coconut oil alone and Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel caused any significant difference when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.16.4 Serum triglycerides

Table 75
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	109.10	5.709	78	1.79	S
CN-Final	102.53	5.647			
CNK-Initial	107.16	6.409	80	0.39	NS
CNK-Final	105.80	5.122			
GN-Initial	102.34	8.710	29	0.49	NS
GN-Final	105.74	10.589			
GNK-Initial	111.27	7.768	59	0.59	NS
GNK-Final	113.52	6.570			
CNK-Final	106.10	6.031	59	2.06	S
GNK-Final	113.52	6.570			
CN-Final	105.99	6.043	70	0.62	NS
CNK-Final	108.18	5.646			
GN-Final	91.55	6.805	22	0.19	NS
GNK-Final	92.53	7.253			
CN-Final	96.65	7.963	29	1.91	S
GN-Final	105.74	10.589			

- (i) Coconut oil after six weeks produced significant decrease in triglycerides when compared to the initial value, while Groundnut oil caused no significant alteration after six weeks.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel caused any significant difference after six weeks when compared to the respective initial and final values.
- (iii) Coconut oil + Kernel produced lower triglycerides after six weeks when compared to Groundnut oil + Kernel, while Coconut oil caused no significant alteration when compared to Coconut oil + Kernel.
- (iv) Groundnut oil caused no significant alteration after six weeks when compared to Groundnut oil + Kernel, while Coconut oil caused a decrease when compared to Groundnut oil.

2.16.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 76
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.984	0.109	78	0.33	NS
CN-Final	2.959	0.131			
CNK-Initial	2.912	0.123	80	0.45	NS
CNK-Final	2.868	0.113			
GN-Initial	3.042	0.215	29	0.41	NS
GN-Final	3.101	0.201			
GNK-Initial	3.164	0.141	58	0.74	NS
GNK-Final	3.100	0.134			
CNK-Final	2.984	0.146	70	0.84	NS
GNK-Final	2.887	0.122			
CN-Final	3.018	0.229	22	3.36	S
CNK-Final	2.590	0.193			
GN-Final	2.941	0.132	58	1.61	NS
GNK-Final	3.100	0.134			
CN-Final	2.774	0.197	29	2.34	S
GN-Final	3.101	0.201			

- (i) Neither Coconut oil nor Groundnut oil produced any significant difference in the ratio after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced significant decrease in the ratio when compared to Coconut oil alone, while Groundnut oil + Kernel produced no significant difference when compared to Groundnut oil alone.
- (iv) Coconut oil produced lower ratio when compared to Groundnut oil, while Coconut oil + Kernel produced no significant difference in the ratio when compared to Groundnut oil + Kernel.

2.17 Volunteers with fat intake 15–20% (medium fat)

2.17.1 Serum total cholesterol

Table 77
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	185.15	3.133	117	0.90	NS
CN-Final	186.54	3.219			
CNK-Initial	186.76	3.201	134	1.35	NS
CNK-Final	184.62	3.225			
GN-Initial	177.54	5.430	40	0.44	NS
GN-Final	176.24	5.694			
GNK-Initial	185.31	3.333	104	1.40	NS
GNK-Final	187.33	3.297			
CNK-Final	186.06	3.656	104	0.69	NS
GNK-Final	187.33	3.297			
CN-Final	189.23	3.469	104	1.35	NS
CNK-Final	186.59	3.630			
GN-Final	173.49	6.327	35	1.30	NS
GNK-Final	178.74	5.572			
CN-Final	183.03	5.054	40	1.80	S
GN-Final	176.24	5.694			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel and Groundnut oil + Kernel produced no significant alteration after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced no significant difference after six weeks when compared to Coconut oil and Groundnut oil respectively.
- (iv) Coconut oil + Kernel did not produce any significant alteration after six weeks when compared to Groundnut oil + Kernel, while Groundnut oil produced a decrease when compared to Coconut oil.

2.17.2 Serum HDL cholesterol

Table 78
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	46.79	0.950	117	0.79	NS
CN-Final	47.34	0.926			
CNK-Initial	47.47	0.970	134	2.94	S
CNK-Final	49.38	0.916			
GN-Initial	45.72	1.472	40	1.39	NS
GN-Final	44.21	1.306			
GNK-Initial	44.95	0.947	104	0.53	NS
GNK-Final	45.29	0.860			
CNK-Final	49.57	0.991	104	5.76	S
GNK-Final	45.29	0.860			
CN-Final	47.31	0.969	104	2.79	S
CNK-Final	50.13	1.009			
GN-Final	44.32	1.310	35	2.59	S
GNK-Final	47.98	1.182			
CN-Final	47.51	1.303	40	2.60	S
GN-Final	44.21	1.306			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration after six weeks when compared the respective initial values.
- (ii) Coconut oil + Kernel produced higher HDL cholesterol after six weeks when compared to the initial value, while Groundnut oil + Kernel produced no significant difference after six weeks.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel caused significant increase after six weeks when compared to Coconut oil and Groundnut oil alone.
- (iv) Both Coconut oil + Kernel and Coconut oil produced higher levels of HDL cholesterol when compared to Groundnut oil + Kernel and Groundnut oil respectively.

2.17.3 Serum LDL cholesterol

Table 79
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	117.51	2.645	117	1.38	NS
CN-Final	119.65	2.867			
CNK-Initial	117.84	2.744	134	1.94	S
CNK-Final	114.48	2.696			
GN-Initial	113.22	4.697	40	0.84	NS
GN-Final	115.85	4.878			
GNK-Initial	117.28	2.731	104	0.82	NS
GNK-Final	118.46	2.903			
CNK-Final	115.05	3.061	104	1.63	NS
GNK-Final	118.46	2.903			
CN-Final	121.53	3.135	104	2.91	S
CNK-Final	115.81	2.996			
GN-Final	113.42	5.356	35	0.25	NS
GNK-Final	112.52	4.845			
CN-Final	119.47	4.250	40	1.07	NS
GN-Final	115.85	4.878			

- (i) Coconut oil and Groundnut oil produced no significant alteration after six weeks when compared to the corresponding initial values.
- (ii) Coconut oil + Kernel produced significant decrease after six weeks when compared to the initial value, while Groundnut oil + Kernel caused no significant difference after six weeks.
- (iii) Coconut oil + Kernel caused significant decrease after six weeks when compared to Coconut oil alone, while Groundnut oil + Kernel produced no significant alteration compared to Groundnut oil alone.
- (iv) Neither Coconut oil nor Coconut oil + Kernel produced any significant difference when compared to Groundnut oil and Groundnut oil + Kernel respectively.

2.17.4 Serum triglycerides

Table 80
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	102.78	5.709	117	3.67	S
CN-Final	93.60	5.286			
CNK-Initial	101.33	5.148	134	0.46	NS
CNK-Final	102.55	4.988			
GN-Initial	95.25	6.386	40	2.12	S
GN-Final	87.51	6.032			
GNK-Initial	111.78	6.630	93	0.66	NS
GNK-Final	114.14	7.159			
CNK-Final	109.35	6.538	93	1.25	NS
GNK-Final	114.14	7.159			
CN-Final	98.15	5.769	104	2.92	S
CNK-Final	106.86	5.787			
GN-Final	86.32	6.783	35	0.71	NS
GNK-Final	89.80	6.368			
CN-Final	79.42	5.042	40	1.87	S
GN-Final	87.51	6.032			

- (i) Coconut oil and Groundnut oil after six weeks decreased triglycerides when compared to their respective initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration after six weeks when compared to their respective initial values.
- (iii) Coconut oil + Kernel produced higher triglycerides when compared to Coconut oil, while Groundnut oil + Kernel caused no significant alteration when compared to Groundnut oil.
- (iv) Coconut oil caused significant decrease in triglyceride level when compared to Groundnut oil, while Coconut oil + Kernel did not produced any significant alteration when compared to Groundnut oil + Kernel.

2.17.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 81
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	2.665	0.093	117	0.14	NS
CN-Final	2.656	0.090			
CNK-Initial	2.652	0.095	134	3.65	S
CNK-Final	2.411	0.068			
GN-Initial	2.585	0.140	40	1.17	NS
GN-Final	2.702	0.136			
GNK-Initial	2.753	0.096	104	0.35	NS
GNK-Final	2.733	0.095			
CN-Final	2.700	0.098	104	4.11	S
CNK-Final	2.395	0.075			
GN-Final	2.606	0.123	35	2.07	S
GNK-Final	2.396	0.122			
CNK-Final	2.404	0.075	104	4.50	S
GNK-Final	2.733	0.095			
CN-Final	2.568	0.104	40	1.48	NS
GN-Final	2.702	0.136			

- (i) Neither Coconut oil nor Groundnut oil produced any significant alteration in the ratio after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced significant decrease in the ratio after six weeks when compared to the initial values, while Groundnut oil + Kernel caused no significant alteration in the ratio when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced lower ratio when compared to Coconut oil alone and Groundnut oil alone respectively.
- (iv) Coconut oil + Kernel produced lower ratio when compared to Groundnut oil + Kernel, while Coconut oil caused no significant alteration in the ratio when compared to Groundnut oil.

2.18 Volunteers with fat intake above 20% (high fat)

2.18.1 Serum total cholesterol

Table 82
Total Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	202.80	9.135	8	1.00	NS
CN-Final	208.67	8.945			
CNK-Initial	201.55	6.358	20	0.23	NS
CNK-Final	202.44	5.707			
GNK-Initial	189.48	5.761	13	2.56	S
GNK-Final	199.85	6.379			
CNK-Final	199.11	7.630	13	0.23	NS
GNK-Final	199.85	6.379			
CN-Final	208.67	8.945	8	0.41	NS
CNK-Final	211.34	8.658			

- (i) Coconut oil caused no significant alteration after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to the initial value, while Groundnut oil + Kernel caused significant increase when the initial and final values were compared.
- (iii) Coconut oil caused no significant alteration after six weeks when compared to Coconut oil + Kernel.

2.18.2 Serum HDL cholesterol

Table 83
HDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial CN-Final	43.85 43.82	2.739 4.135	8	0.01	NS
CNK-Initial CNK-Final	46.54 47.66	2.689 1.924	20	0.68	NS
GNK-Initial GNK-Final	42.81 44.79	2.917 2.885	13	3.37	S
CNK-Final GNK-Final	48.34 44.79	2.481 2.885	13	1.77	S
CN-Final CNK-Final	43.82 48.68	4.135 2.230	8	1.73	NS

- (i) Coconut oil produced no significant difference after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel produced no significant alteration after six weeks when compared to the initial values, while Groundnut oil + Kernel caused significant increase in HDL cholesterol after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel produced significant increase in HDL cholesterol after six weeks when compared to Groundnut oil + Kernel, while Coconut oil caused no significant alteration when compared to Coconut oil + Kernel.

2.18.3 Serum LDL cholesterol

Table 84
LDL Cholesterol
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	142.56	13.685	8	0.54	NS
CN-Final	145.68	13.327			
CNK-Initial	132.56	6.283	20	1.36	NS
CNK-Final	124.00	6.869			
GNK-Initial	127.94	7.977	13	1.16	NS
GNK-Final	131.85	9.038			
CNK-Final	127.26	8.554	13	0.95	NS
GNK-Final	131.85	9.038			
CN-Final	145.68	13.327	8	1.34	NS
CNK-Final	134.20	11.556			

- (i) Coconut oil produced no significant alteration in LDL Cholesterol after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant alteration in LDL cholesterol when the initial and final values were compared.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced comparable values after six weeks.
- (iv) Coconut oil + Kernel did not produce any significant alteration when compared to Coconut oil alone.

2.18.4 Serum triglycerides

Table 85
Triglycerides
(mg/100 ml serum)

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	129.99	27.650	8	1.61	NS
CN-Final	148.64	29.235			
CNK-Initial	135.76	17.303	20	0.40	NS
CNK-Final	132.36	15.944			
GNK-Initial	118.35	17.960	7	1.71	NS
GNK-Final	147.91	30.639			
CNK-Final	136.14	29.649	7	1.01	NS
GNK-Final	147.91	30.639			
CN-Final	148.64	29.235	8	0.03	NS
CNK-Final	148.79	29.048			

- (i) Coconut oil caused no significant alteration in triglycerides level after six weeks when compared to the initial values.
- (ii) Neither Coconut oil + Kernel nor Groundnut oil + Kernel produced any significant difference after six weeks when compared to the initial values.
- (iii) Coconut oil + Kernel and Groundnut oil + Kernel produced comparable values after six weeks .
- (iv) Coconut oil + Kernel did not produce any significant alteration after six weeks when compared to Coconut oil alone.

2.18.5 Serum LDL cholesterol/HDL cholesterol ratio

Table 86
LDL Cholesterol/HDL Cholesterol ratio

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
CN-Initial	3.342	0.402	8	0.63	NS
CN-Final	3.499	0.402			
CNK-Initial	3.025	0.216	20	1.75	S
CNK-Final	2.683	0.182			
GNK-Initial	3.192	0.301	13	0.48	NS
GNK-Final	3.146	0.333			
CN-Final	3.499	0.402	8	2.33	S
CNK-Final	2.789	0.270			
CNK-Final	2.723	0.226	13	1.79	S
GNK-Final	3.146	0.333			

- (i) Coconut oil produced no significant alteration in the ratio after six weeks when compared to the initial values.
- (ii) Coconut oil + Kernel caused significant decrease in the ratio after six weeks when compared to the initial values, while Groundnut oil + Kernel produced no significant difference in the ratio when the initial and final values were compared.
- (iii) Coconut oil + Kernel produced lower ratio after six weeks when compared to Coconut oil alone.
- (iv) Coconut oil + Kernel after six weeks produced lower ratio when compared to Groundnut oil + Kernel.

CHAPTER 3

Intergroup Comparison on the Effect of Consumption of Coconut Kernel and Coconut Oil on the Serum Lipid Profile

3.1 Young (18–40 years) (1) Vs old (41–65 years) (2)

3.1.1 Serum total cholesterol and LDL cholesterol

Table 87
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	-0.008	1.522	204	-1.38	NS
CN-(2)	3.323	1.875			
CNK-(1)	-0.965	1.567	235	0.20	NS
CNK-(2)	-1.448	1.849			
GN-(1)	-2.101	2.647	70	0.51	NS
GN-(2)	- 4.481	3.089			
GNK-(1)	3.267	1.511	177	0.90	NS
GNK-(2)	1.016	2.082			

Table 87 (Contd. . .)
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
LDL Cholesterol					
CN-(1)	0.802	1.550	204	- 0.93	NS
CN-(2)	3.115	1.983			
CNK-(1)	-1.875	1.638	235	0.66	NS
CNK-(2)	-3.754	2.473			
GN-(1)	1.801	2.720	70	1.18	NS
GN-(2)	-4.067	3.770			
GNK-(1)	1.661	1.514	177	0.76	NS
GNK-(2)	-0.195	1.991			

There was no significant variation in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol and LDL cholesterol in the young and old age groups.

3.1.2 Serum HDL cholesterol

Table 88
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	0.447	0.672	204	-0.71	NS
CN-(2)	1.196	0.798			
CNK-(1)	0.852	0.668	235	- 1.35	NS
CNK-(2)	2.232	0.765			
GN-(1)	-2.013	0.985	70	-0.15	NS
GN-(2)	-1.754	1.221			
GNK-(1)	0.664	0.686	176	0.36	NS
GNK-(2)	0.302	0.700			
Triglycerides					
CN-(1)	-7.438	2.569	204	-0.28	NS
CN-(2)	-6.244	3.577			
CNK-(1)	1.320	2.306	235	0.79	NS
CNK-(2)	-1.972	3.734			
GN-(1)	-4.846	4.014	70	-0.97	NS
GN-(2)	3.008	7.832			
GNK-(1)	2.374	2.374	160	-0.59	NS
GNK-(2)	5.587	5.639			

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on HDL cholesterol in the young and old age groups.

The effect of consumption of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on triglycerides was also comparable in the two groups.

3.2 Male (1) Vs female (2)

3.2.1 Serum total cholesterol and LDL cholesterol

Table 89
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	1.257	2.036	204	-0.04	NS
CN-(2)	1.357	1.449			
CNK-(1)	-0.852	1.695	235	0.21	NS
CNK-(2)	-1.366	1.627			
GN-(1)	0.032	3.240	70	1.20	NS
GN-(2)	-4.997	2.707			
GNK-(1)	2.571	1.798	177	0.17	NS
GNK-(2)	2.138	1.701			
LDL Cholesterol					
CN-(1)	-0.137	2.059	204	-1.21	NS
CN-(2)	2.903	1.507			
CNK-(1)	-2.020	2.179	235	0.36	NS
CNK-(2)	-3.072	1.841			
GN-(1)	1.724	3.093	70	0.62	NS
GN-(2)	-1.072	3.191			
GNK-(1)	0.249	1.799	177	-0.45	NS
GNK-(2)	1.362	1.640			

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol was similar in the male and female. Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel showed no significant difference in the effect on LDL cholesterol also in the male and female.

3.2.2 Serum HDL cholesterol and triglycerides

Table 90
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	1.132	0.678	204	0.60	NS
CN-(2)	0.500	0.722			
CNK-(1)	1.201	0.768	235	-0.36	NS
CNK-(2)	1.579	0.666			
GN-(1)	-1.278	1.235	70	0.75	NS
GN-(2)	- 2.471	1.013			
GNK-(1)	1.149	0.768	176	1.12	NS
GNK-(2)	0.029	0.644			
Triglycerides					
CN-(1)	-1.792	3.634	204	1.98	S
CN-(2)	-10.247	2.504			
CNK-(1)	-3.094	3.719	235	-1.16	NS
CNK-(2)	1.816	2.412			
GN-(1)	-2.594	5.985	70	0.02	NS
GN-(2)	-2.720	4.485			
GNK-(1)	8.065	4.898	160	1.46	NS
GNK-(2)	0.229	2.785			

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on HDL Cholesterol was similar in the male and female. In the case of triglycerides, the decrease in triglycerides with Coconut oil was more in female than in male, while the effect was similar with Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel.

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3.3 Subjects with total cholesterol below 230 mg/100 ml (1)
Vs those with total cholesterol above 230 mg/100 ml (2)

3.3.1 Serum total cholesterol and LDL cholesterol

Table 91
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	1.602	1.196	204	0.75	NS
CN-(2)	-1.476	5.230			
CNK-(1)	-1.890	1.496	183	-0.53	NS
CNK-(2)	0.596	4.274			
GN-(1)	-3.230	2.123	70	-0.92	NS
GN-(2)	5.203	11.128			
GNK-(1)	2.512	1.367	157	0.50	NS
GNK-(2)	0.321	5.551			
LDL Cholesterol					
CN-(1)	1.923	1.254	204	0.51	NS
CN-(2)	-0.254	4.917			
CNK-(1)	-2.679	1.584	183	0.32	NS
CNK-(2)	-4.280	5.326			
GN-(1)	-0.535	2.241	70	-1.31	NS
GN-(2)	12.180	13.008			
GNK-(1)	0.989	1.396	157	0.10	NS
GNK-(2)	0.545	4.599			

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol was similar in the two groups.

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel in the two groups on LDL Cholesterol also.

3.3.2 Serum HDL cholesterol and triglycerides

Table 92
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	0.983	0.549	204	1.45	NS
CN-(2)	-1.591	1.286			
CNK-(1)	1.613	0.635	183	-1.99	S
CNK-(2)	5.621	2.182			
GN-(1)	-1.742	0.817	70	1.05	NS
GN-(2)	-5.330	2.013			
GNK-(1)	0.482	0.586	156	0.51	NS
GNK-(2)	-0.426	1.529			
Triglycerides					
CN-(1)	-8.135	2.139	204	-1.76	S
CN-(2)	4.570	8.348			
CNK-(1)	0.624	2.454	183	-0.56	NS
CNK-(2)	4.920	7.915			
GN-(1)	-2.27	3.821	70	0.45	NS
GN-(2)	-9.43	4.140			
GNK-(1)	4.309	2.491	157	0.13	NS
GNK-(2)	3.223	13.735			

HDL Cholesterol was more in the group with cholesterol above 230 mg with Coconut oil + Kernel, while with Coconut oil, Groundnut oil and Groundnut oil + Kernel, the effect was similar in both groups.

In the case of triglycerides, while subject with total cholesterol below 230 mg, showed significant decrease with Coconut oil, those with cholesterol above 230 mg, showed increase. There was no significant difference with Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on the effect on triglycerides in both groups.

3.4 Vegetarian (1) Vs non vegetarian (2)

3.4.1 Serum total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides

Table 93
Total Cholesterol, LDL Cholesterol, HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	-7.252	10.841	184	-1.24	NS
CN-(2)	1.723	1.278			
CNK-(1)	-1.429	2.571	235	-0.08	NS
CNK-(2)	-1.132	1.313			
GNK-(1)	2.187	2.490	177	-0.04	NS
GNK-(2)	2.346	1.382			
LDL Cholesterol					
CN-(1)	-9.688	10.782	184	-1.56	NS
CN-(2)	1.998	1.326			
CNK-(1)	-8.388	5.638	235	1.52	NS
CNK-(2)	-1.870	1.395			
GNK-(1)	1.355	2.132	177	0.16	NS
GNK-(2)	0.807	1.366			
HDL Cholesterol					
CN-(1)	1.758	2.377	184	0.27	NS
CN-(2)	0.895	0.570			
CNK-(1)	0.472	0.783	235	-0.71	NS
CNK-(2)	1.568	0.564			
GNK-(1)	0.753	0.731	176	0.20	NS
GNK-(2)	0.474	0.563			
Triglycerides					
CN-(1)	3.950	8.912	184	0.83	NS
CN-(2)	-6.752	2.337			
CNK-(1)	-2.045	5.845	235	-0.36	NS
CNK-(2)	0.206	2.208			
GNK-(1)	0.522	5.427	177	-0.59	NS
GNK-(2)	4.709	2.705			

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel and Groundnut oil + Kernel on total cholesterol, LDL Cholesterol, HDL Cholesterol and triglycerides in the vegetarian and nonvegetarian groups.

3.5 Subjects with triglycerides below 70 mg/100 ml (1) Vs those with triglycerides above 180 mg/100 ml (2)

3.5.1 Serum total cholesterol and LDL cholesterol

Table 94
Total Cholesterol and Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	2.651	2.258	66	2.04	S
CN-(2)	-5.868	3.864			
CNK-(1)	-2.705	2.680	60	-0.06	NS
CNK-(2)	-2.413	3.995			
GN-(1)	-4.444	3.710	28	-0.67	NS
GN-(2)	1.300	4.465			
GNK-(1)	2.960	2.753	52	0.05	NS
GNK-(2)	3.211	4.296			
LDL Cholesterol					
CN-(1)	2.406	1.995	66	1.65	NS
CN-(2)	-4.615	4.472			
CNK-(1)	-3.698	3.060	60	-0.62	NS
CNK-(2)	-0.655	3.812			
GN-(1)	0.101	3.234	28	0.10	NS
GN-(2)	-0.648	2.004			
GNK-(1)	-0.837	2.435	52	-0.70	NS
GNK-(2)	2.229	3.900			

Coconut oil produced a decrease in total cholesterol in subjects with triglycerides above 180 mg, while in those below 70 mg, there was an increase. The effect of Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol in the two groups was comparable.

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL cholesterol in the two

groups.

3.5.2 Serum HDL cholesterol and triglycerides

Table 95
HDL Cholesterol and triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	-1.524	1.109	66	-2.05	S
CN-(2)	2.264	1.467			
CNK-(1)	1.416	1.567	60	-0.69	NS
CNK-(2)	3.190	2.046			
GN-(1)	-2.558	1.197	28	-1.33	NS
GN-(2)	1.206	1.842			
GNK-(1)	1.271	1.313	52	0.78	NS
GNK-(2)	-0.255	1.196			
Triglycerides					
CN-(1)	2.291	2.490	66	4.02	S
CN-(2)	-30.615	10.152			
CNK-(1)	-2.378	2.959	60	0.55	NS
CNK-(2)	-7.639	11.049			
GN-(1)	-2.124	4.623	28	-0.85	NS
GN-(2)	10.834	26.669			
GNK-(1)	5.757	3.201	52	-0.23	NS
GNK-(2)	8.729	16.196			

Coconut oil produced an increase in HDL cholesterol in subjects with triglycerides above 180 mg, while there was a decrease in those below 70 mgs. In the case of triglycerides, Coconut oil produced a decrease in subjects above 180 mgs, while an increase was seen in those below 70 mgs. The effect of Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on HDL cholesterol and triglycerides was comparable in the two groups.

3.6 Low-fat (10-15 %) (1) Vs high fat (above 20%) (2)

3.6.1 Serum total cholesterol and LDL cholesterol

Table 96
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	0.694	1.946	86	-0.85	NS
CN-(2)	5.871	5.886			
CNK-(1)	-0.075	2.071	100	-0.21	NS
CNK-(2)	0.891	3.836			
GNK-(1)	0.976	2.482	72	-1.70	S
GNK-(2)	10.366	4.048			
LDL Cholesterol					
CN-(1)	0.929	2.101	86	-0.34	NS
CN-(2)	3.117	5.739			
CNK-(1)	-0.018	2.446	100	1.47	NS
CNK-(2)	-8.463	6.232			
GNK-(1)	-0.336	2.479	72	-0.79	NS
GNK-(2)	3.912	3.386			

The increase in total cholesterol with Groundnut oil + Kernel was more in the high fat group while with Coconut oil and Coconut oil + Kernel, there was no significant difference.

Ther was no significant difference in the effect of Coconut oil on LDL cholesterol in the low fat group and high fat group.

The effect of Coconut oil + Kernel and Groundnut oil + Kernel on LDL Cholesterol was also similar in subjects with low fat intake and high fat intake.

3.6.2 Serum HDL cholesterol and triglycerides

Table 97
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	1.134	0.811	86	0.46	NS
CN-(2)	-0.029	2.473			
CNK-(1)	0.722	0.910	100	-0.20	NS
CNK-(2)	1.122	1.660			
GNK-(1)	0.474	0.955	71	-0.76	NS
GNK-(2)	1.979	0.587			
Triglycerides					
CN-(1)	-6.565	3.670	86	-2.18	S
CN-(2)	18.654	11.564			
CNK-(1)	-1.357	3.456	100	0.26	NS
CNK-(2)	-3.402	8.421			
GNK-(1)	2.248	3.787	66	-2.27	S
GNK-(2)	29.568	17.309			

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on HDL cholesterol in the two groups. Groundnut oil + Kernel also showed no significant difference on HDL Cholesterol in the low fat group and high fat group.

Coconut oil produced an increase in triglycerides in the high fat group, while there was a decrease in the low fat groups. With Coconut oil + Kernel there was no significant difference in the two groups, while Groundnut oil + Kernel produced greater increase in triglycerides in high fat group.

3.7 Subjects with caloric intake below 2000 K.calories (1) Vs those with caloric intake above 2000 K.calories (2)

3.7.1 Serum total cholesterol and LDL cholesterol

Table 98
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	2.623	1.588	204	1.01	NS
CN-(2)	0.223	1.723			
CNK-(1)	-1.166	1.786	234	-0.03	NS
CNK-(2)	-1.104	1.619			
GN-(1)	-4.286	2.963	70	-0.65	NS
GN-(2)	-1.543	2.936			
GNK-(1)	3.625	1.607	176	0.98	NS
GNK-(2)	1.178	1.829			
LDL Cholesterol					
CN-(1)	3.467	1.629	204	1.31	NS
CN-(2)	0.259	1.778			
CNK-(1)	-4.660	2.078	234	-1.36	NS
CNK-(2)	-0.810	1.918			
GN-(1)	-0.588	2.661	70	-0.30	NS
GN-(2)	0.778	3.439			
GNK-(1)	1.123	1.497	176	0.23	NS
GNK-(2)	0.563	1.836			

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol in the two groups.

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL Cholesterol in subjects with caloric intake below 2000 K.calories and above 2000 K.calories was also comparable.

3.7.2 Serum HDL cholesterol and triglycerides

Table 99
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	1.190	0.747	204	0.79	NS
CN-(2)	0.372	0.708			
CNK-(1)	2.571	0.742	234	2.12	S
CNK-(2)	0.435	0.683			
GN-(1)	-2.016	1.134	70	-0.08	NS
GN-(2)	-1.881	1.093			
GNK-(1)	0.721	0.708	175	0.41	NS
GNK-(2)	0.314	0.696			
Triglycerides					
CN-(1)	-8.316	2.681	204	-0.59	NS
CN-(2)	-5.828	3.139			
CNK-(1)	-0.212	2.800	234	-0.02	NS
CNK-(2)	-0.117	3.022			
GN-(1)	-7.049	5.209	70	-1.09	NS
GN-(2)	0.843	4.993			
GNK-(1)	0.404	4.095	160	-1.04	NS
GNK-(2)	6.021	3.508			

Coconut oil + Kernel produced greater increase in HDL Cholesterol in subjects with the lower caloric intake, while with Coconut oil, Groundnut oil and Groundnut oil + Kernel there was no significant difference in the two groups. There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on triglycerides in the two groups.

3.8 Subjects with caloric intake below 1700 K.calories (1) Vs those with caloric intake above 2500 K.calories (2)

3.8.1 Serum total cholesterol and LDL cholesterol

Table 100
Total Cholesterol and LDL Cholesterol

Variable	No. of subjects	Mean value	Standard deviation	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	15	6.022	18.168	0.81	NS
CN-(2)	28	0.767	20.830		
CNK-(1)	27	-3.020	16.156	0.58	NS
CNK-(2)	34	0.339	18.588		
GN-(1)	4	0.423	16.780	1.73	NS
GN-(2)	10	6.727	18.068		
GNK-(1)	16	2.710	16.638	0.58	NS
GNK-(2)	29	5.855	17.135		
LDL Cholesterol					
CN-(1)	16	8.421	16.024	1.21	NS
CN-(2)	27	0.969	20.628		
CNK-(1)	27	0.455	16.120	0.003	NS
CNK-(2)	34	0.442	20.158		
GN-(1)	4	-7.018	18.342	0.93	NS
GN-(2)	10	6.061	23.606		
GNK-(1)	16	0.608	11.110	0.51	NS
GNK-(2)	29	3.362	19.439		

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel. Groundnut oil and Groundnut oil + Kernel on total cholesterol in the two group.

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL Cholesterol was also similar in subjects with caloric intake below 1700 K.calories and those with caloric intake above 2500 K.calories.

3.8.2 Serum HDL cholesterol and triglycerides

Table 101
HDL Cholesterol and triglycerides

Variable	No. of subjects	Mean value	Standard deviation	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	15	-0.077	5.965	0.27	NS
CN-(2)	29	-0.676	7.100		
CNK-(1)	27	1.657	6.916	0.62	NS
CNK-(2)	33	0.400	8.304		
GN-(1)	4	-2.085	5.641	0.27	NS
GN-(2)	10	-3.219	6.778		
GNK-(1)	16	2.165	3.698	1.09	NS
GNK-(2)	27	0.178	6.527		
Triglycerides					
CN-(1)	15	-3.596	29.405	0.30	NS
CN-(2)	28	-6.693	32.765		
CNK-(1)	27	-4.304	33.345	1.274	NS
CNK-(2)	34	7.099	34.775		
GN-(1)	4	-6.775	34.145	0.94	NS
GN-(2)	10	14.089	34.918		
GNK-(1)	16	14.096	16.174	0.79	NS
GNK-(2)	29	3.880	37.577		

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on HDL Cholesterol in the two groups.

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on triglycerides was also similar in subjects with low caloric intake and high caloric intake.

3.9 Subjects who smoke (1) Vs nonsmokers (2)

3.9.1 Serum total cholesterol and LDL cholesterol

Table 102
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	3.218	5.819	172	0.31	NS
CN-(2)	1.628	1.285			
CNK-(1)	10.950	3.394	204	2.44	S
CNK-(2)	-2.147	1.318			
GN-(1)	0.797	7.189	64	0.69	NS
GN-(2)	-3.765	2.360			
GNK-(1)	0.962	3.570	152	-0.24	NS
GNK-(2)	2.242	1.388			
LDL Cholesterol					
CN-(1)	1.003	5.815	172	-0.41	NS
CN-(2)	3.172	1.321			
CNK-(1)	1.985	10.774	204	0.80	NS
CNK-(2)	-3.183	1.467			
GN-(1)	3.518	6.661	64	0.53	NS
GN-(2)	-0.235	2.607			
GNK-(1)	-1.927	5.055	152	0.64	NS
GNK-(2)	1.475	1.350			

Coconut oil + Kernel caused an increase in total cholesterol in smokers while there was a decrease in non-smokers. Coconut oil, Groundnut oil and Groundnut oil + Kernel produced comparable effects on total cholesterol in the two groups. There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL Cholesterol in the two groups.

3.9.2 Serum HDL cholesterol and triglycerides

Table 103
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	2.217	1.952	172	0.73	NS
CN-(2)	0.514	0.595			
CNK-(1)	2.719	1.685	204	0.62	NS
CNK-(2)	1.279	0.566			
GN-(1)	0.747	2.888	64	1.51	NS
GN-(2)	-2.803	0.822			
Triglycerides					
CN-(1)	0.024	8.068	172	1.01	NS
CN-(2)	-9.168	2.308			
CNK-(1)	-1.593	8.826	204	-0.25	NS
CNK-(2)	0.525	2.054			
GN-(1)	-17.780	9.773	64	-1.57	NS
GN-(2)	-0.668	4.040			

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on HDL cholesterol in the two groups. The effect of consumption of Groundnut oil on HDL Cholesterol was also similar in subjects who smoke and nonsmokers.

There was no significant difference in the effect of Coconut oil, Coconut oil + Kernel and Groundnut oil on triglycerides in the two groups.

3.10 Subjects who consumes alcohol (1) Vs abstainers (2)

3.10.1 Serum total cholesterol and LDL cholesterol

Table 104
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CNK-(1)	0.264	3.450	235	-0.47	NS
CNK-(2)	-1.384	1.273			
GN-(1)	1.433	4.133	70	0.60	NS
GN-(2)	-3.143	2.247			
GNK-(1)	3.343	3.619	177	-0.33	NS
GNK-(2)	2.159	1.317			
LDL Cholesterol					
CNK-(1)	-1.245	3.937	235	0.39	NS
CNK-(2)	-2.882	1.510			
GN-(1)	-0.988	4.111	70	-0.16	NS
GN-(2)	0.277	2.414			
GNK-(1)	-1.400	3.321	177	-0.76	NS
GNK-(2)	1.254	1.302			

There was no significant difference in the effect of Coconut oil + Kernel on total cholesterol in the subjects who consumes alcohol when compared to abstainers. The effect of Groundnut oil on total cholesterol also similar in the two groups. Consumption of Groundnut oil + Kernel produced comparable values in the two groups.

There was no significant difference in the effect of Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL cholesterol in the two groups.

3.10.2 Serum HDL cholesterol and triglycerides

Table 105
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CNK-(1)	1.908	1.401	235	0.36	NS
CNK-(2)	1.363	0.541			
GN-(1)	2.215	2.393	70	1.62	NS
GN-(2)	-2.319	0.816			
GNK-(1)	-0.005	1.300	176	-0.42	NS
GNK-(2)	0.598	0.536			
Triglycerides					
CNK-(1)	-3.199	8.624	235	-0.59	NS
CNK-(2)	0.402	1.996			
GN-(1)	1.042	13.629	70	0.31	NS
GN-(2)	-3.001	3.779			
GNK-(1)	21.886	9.686	160	2.99	S
GNK-(2)	0.338	2.528			

There was no significant difference in the effect of Coconut oil + Kernel and Groundnut oil in the two groups on HDL cholesterol. Groundnut oil + Kernel produced similar effects on HDL Cholesterol in subjects who consumes alcohol compared to abstainers.

There was greater increase in the effect of Groundnut oil + Kernel in those who consume alcohol. Coconut oil + Kernel and Groundnut oil showed no significant difference in the effect on triglycerides in the two group.

3.11 Non vegetarian (1) Vs fishermen (2)

3.11.1 Serum total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides

Table 106
Total Cholesterol, LDL Cholesterol, HDL Cholesterol and triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	0.414	1.416	156	0.25	NS
CN-(2)	-0.562	2.606			
LDL Cholesterol					
CN-(1)	0.739	1.471	156	-0.27	NS
CN-(2)	1.834	2.281			
HDL Cholesterol					
GN-(1)	1.311	0.660	156	1.29	NS
GN-(2)	1.061	-1.138			
Triglycerides					
CN-(1)	-9.254	2.566	156	0.32	NS
CN-(2)	-11.501	4.166			

There was no significant difference in the effect of Coconut oil on total cholesterol and LDL Cholesterol in the two groups. Coconut oil produced similar effect on HDL cholesterol in the nonvegetarian and fishermen community. There was no significant effect of Coconut oil on triglycerides in the two groups.

3.12. Subjects with hypertension (1) Vs those with normal blood pressure (2)

3.12.1 Serum total cholesterol and LDL cholesterol

Table 107
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	9.089	2.943	204	2.70	S
CN-(2)	0.045	1.269			
CNK-(1)	-0.222	2.983	235	0.35	NS
CNK-(2)	-1.354	1.305			
GN-(1)	0.589	4.921	70	0.68	NS
GN-(2)	-3.366	2.307			
GNK-(1)	0.465	2.740	177	-0.69	NS
GNK-(2)	2.714	1.383			
LDL Cholesterol					
CN-(1)	9.165	3.365	204	2.50	S
CN-(2)	0.503	1.291			
CNK-(1)	-2.629	3.441	235	0.01	NS
CNK-(2)	-2.676	1.546			
GN-(1)	0.216	6.121	70	0.01	NS
GN-(2)	0.163	2.418			
GNK-(1)	-0.221	2.310	177	-0.42	NS
GNK-(2)	1.115	1.384			

Subjects with hypertension showed greater increase in total cholesterol and LDL cholesterol when on Coconut oil than those with normal blood pressure. The effect of Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on total cholesterol and LDL Cholesterol was similar in the two groups.

3.12.2 Serum HDL cholesterol and triglycerides

Table 108
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	0.111	1.420	204	-0.50	NS
CN-(2)	0.849	0.552			
CNK-(1)	3.190	1.118	235	1.55	NS
CNK-(2)	1.088	0.560			
GN-(1)	-1.215	1.522	70	0.39	NS
GN-(2)	-2.072	0.887			
GNK-(1)	1.076	0.900	176	0.52	NS
GNK-(2)	0.395	0.568			
Triglycerides					
CN-(1)	-1.557	4.691	204	1.04	NS
CN-(2)	-7.849	2.314			
CNK-(1)	0.182	6.821	235	0.05	NS
CNK-(2)	-0.118	2.080			
GN-(1)	9.142	10.428	70	1.39	NS
GN-(2)	-4.793	3.811			
GNK-(1)	4.273	6.902	160	0.10	NS
GNK-(2)	3.552	2.899			

The effect of Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on HDL Cholesterol was similar in the two groups.

Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel showed no significant difference in the effect on triglycerides in the subjects with hypertension and those with normal blood pressure.

3.13 Diabetic (1) Vs non diabetic (2)

3.13.1 Serum total cholesterol and LDL cholesterol

Table 109
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	3.941	5.718	204	0.53	NS
CN-(2)	1.170	1.212			
CNK-(1)	-4.557	4.016	235	-0.71	NS
CNK-(2)	-0.956	1.243			
GN-(1)	-6.743	5.036	70	-0.40	NS
GN-(2)	-2.589	2.170			
GNK-(1)	8.921	4.766	177	1.37	NS
GNK-(2)	1.892	1.277			
LDL Cholesterol					
CN-(1)	4.501	5.399	204	0.54	NS
CN-(2)	1.566	1.256			
CNK-(1)	-14.947	7.994	235	-2.20	S
CNK-(2)	-1.897	1.399			
GN-(1)	-9.320	4.255	70	-0.88	NS
GN-(2)	0.584	2.314			
GNK-(1)	5.212	3.366	177	0.91	NS
GNK-(2)	0.600	1.270			

Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel showed no significant difference in the effect on total cholesterol in the two groups. The decrease in LDL Cholesterol was greater in the diabetic with Coconut oil + Kernel. There was no significant difference in the effect of Coconut oil, Groundnut oil and Groundnut oil + Kernel on LDL cholesterol in the two groups.

3.13.2 Serum HDL cholesterol and triglycerides

Table 110
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	-1.428	1.506	204	-1.00	NS
CN-(2)	0.868	0.535			
CNK-(1)	7.806	2.273	235	3.23	S
CNK-(2)	1.034	0.506			
GN-(1)	-1.767	1.042	70	0.05	NS
GN-(2)	-1.949	0.817			
GNK-(1)	0.861	1.819	176	0.18	NS
GNK-(2)	0.491	0.514			
Triglycerides					
CN-(1)	9.797	11.513	204	1.91	S
CN-(2)	-7.909	2.106			
CNK-(1)	-4.234	9.867	235	-0.51	NS
CNK-(2)	0.192	2.107			
GN-(1)	21.700	6.679	70	1.41	NS
GN-(2)	-3.724	3.716			
GNK-(1)	35.457	20.177	160	3.14	S
GNK-(2)	1.572	2.450			

Coconut oil + Kernel produced greater increase in HDL Cholesterol in the diabetics, while there was no significant difference in the effect of Coconut oil, Groundnut oil and Groundnut oil + Kernel on HDL Cholesterol in the two groups. Coconut oil and Groundnut oil + Kernel produced increase in triglycerides in diabetics, while there was a decrease in the nondiabetic in the case of Coconut oil and a smaller increase in the case of Groundnut oil + Kernel. There was no significant difference in the effect on triglycerides with Coconut oil + Kernel and Groundnut oil.

3.14 Subjects with fish consumption below 150 g/day (1) Vs those with consumption above 150 g/day (2)

3.14.1 Serum total cholesterol and LDL cholesterol

Table 111
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	1.975	1.316	199	0.44	NS
CN-(2)	0.347	2.320			
CNK-(1)	-0.380	1.246	230	1.64	S
CNK-(2)	- 8.912	4.203			
GN-(1)	-2.780	2.147	70	-0.05	NS
GN-(2)	-2.110	4.110			
GNK-(1)	2.794	1.289	173	1.22	NS
GNK-(2)	-5.647	4.984			
LDL Cholesterol					
CN-(1)	2.118	1.353	199	-0.26	NS
CN-(2)	3.085	2.263			
CNK-(1)	-2.064	1.480	230	1.05	NS
CNK-(2)	-8.595	4.883			
GN-(1)	0.185	2.298	70	0.04	NS
GN-(2)	-0.330	0.330			
GNK-(1)	1.205	1.260	173	1.24	NS
GNK-(2)	-7.225	6.229			

Coconut oil + Kernel produced greater decrease in total cholesterol in subjects with fish consumption above 150 g than in those with fish consumption below 150 g. There was no significant difference in the effect of Coconut oil, Groundnut oil and Groundnut oil + Kernel on total cholesterol in the two groups. Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel produced similar effect on LDL cholesterol in the two groups.

3.14.2 Serum HDL cholesterol and triglycerides

Table 112
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	0.790	0.576	199	0.27	NS
CN-(2)	0.350	1.076			
CNK-(1)	1.641	0.528	230	1.67	S
CNK-(2)	- 2.067	2.064			
GN-(1)	-2.005	0.804	70	-0.48	NS
GN-(2)	0.300	2.080			
GNK-(1)	0.633	0.511	172	0.58	NS
GNK-(2)	0.973	3.169			
Triglycerides					
CN-(1)	-6.596	2.352	199	0.79	NS
CN-(2)	-11.785	4.228			
CNK-(1)	0.378	2.145	230	0.18	NS
CNK-(2)	-1.215	9.234			
GN-(1)	-2.446	3.659	70	0.36	NS
GN-(2)	-10.320	32.540			
GNK-(1)	3.835	2.792	156	-0.45	NS
GNK-(2)	10.257	10.115			

Coconut oil + Kernel produced decrease in HDL Cholesterol in those with fish consumption above 150 g while there was an increase in the other group. Coconut oil, Groundnut oil and Groundnut oil + Kernel produced similar effects in HDL cholesterol in the two groups. Coconut oil, Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel showed no significant difference in the effect on triglycerides in the two groups.

3.15 Subjects who consume meat/beef daily (1) Vs those who do not (2)

3.15.1 Serum total cholesterol and LDL cholesterol

Table 113
Total Cholesterol and LDL Cholesterol

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
Total Cholesterol					
CN-(1)	-4.857	3.010	204	-2.34	S
CN-(2)	2.539	1.271			
CNK-(1)	-1.525	3.816	235	-0.12	NS
CNK-(2)	-1.111	1.245			
GNK-(1)	12.182	3.055	177	3.78	S
GNK-(2)	0.259	1.294			
LDL Cholesterol					
CN-(1)	-4.132	3.119	204	-2.15	S
CN-(2)	2.880	1.313			
CNK-(1)	-5.993	4.669	235	-0.95	NS
CNK-(2)	-2.130	1.452			
GNK-(1)	12.113	2.723	177	4.47	S
GNK-(2)	-1.468	1.270			

Coconut oil produced decrease in total cholesterol in those who consume meat/beef daily, while Groundnut oil + Kernel produced greater increase in this group. Coconut oil + Kernel produced similar effects in the two groups. LDL Cholesterol was lower with Coconut oil in those who consume meat/beef daily, while in these subjects it was higher with Groundnut oil + Kernel. Coconut oil + Kernel produced similar effect on LDL Cholesterol in the two groups.

3.15.2 Serum HDL cholesterol and triglycerides

Table 114
HDL Cholesterol and Triglycerides

Variable	Mean value	Standard error	Degrees of freedom	't' value	Significance at 5% level
HDL Cholesterol					
CN-(1)	-2.659	1.059	204	-3.00	S
CN-(2)	1.418	0.566			
CNK-(1)	4.230	1.326	235	2.25	S
CNK-(2)	0.982	0.540			
GNK-(1)	0.739	1.004	176	0.20	NS
GNK-(2)	0.468	0.560			
Triglycerides					
CN-(1)	0.702	7.132	204	1.63	NS
CN-(2)	-8.478	2.072			
CNK-(1)	14.569	7.070	235	2.90	S
CNK-(2)	-2.437	2.066			
GNK-(1)	3.716	8.334	160	0.01	NS
GNK-(2)	3.651	2.661			

There was decrease in HDL Cholesterol with Coconut oil in those who consume meat/beef daily, while there was increase in the other group. Coconut oil + Kernel produced greater increase in HDL cholesterol in those consume beef daily. Groundnut oil + Kernel produced similar effects in the two groups. Triglycerides were significantly higher in those who consume meat/beef daily with Coconut oil + Kernel, while there was no significant difference in the effect on triglycerides with Coconut oil and Groundnut oil + Kernel.

3.16 Comparison of subjects on the basis of physical activity

3.16.1 Serum total cholesterol

Table 115
Total Cholesterol

Group	Physical activity	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Mild	0.783	2.076	No two groups are significantly different
2	Moderate	1.086	1.628	
3	Heavy	3.698	2.906	
Coconut oil + Kernel Stage (DF = 236)				
1	Mild	0.579	1.837	No two groups are significantly different
2	Moderate	-2.373	1.633	
3	Heavy	-0.224	5.230	
Groundnut oil Stage (DF = 71)				
1	Mild	-1.285	3.130	No two groups are significantly different
2	Moderate	-2.907	2.944	
3	Heavy	-8.604	7.095	
Groundnut oil + Kernel Stage (DF = 178)				
1	Mild	2.644	2.168	No two groups are significantly different
2	Moderate	1.938	1.574	
3	Heavy	5.618	5.188	

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel, on total cholesterol in the three groups. The effect of consumption of Groundnut oil and Groundnut oil + Kernel on total cholesterol produced similar effects in the subjects with mild, moderate and heavy physical activity.

3.16.2 Serum LDL cholesterol

Table 116
LDL Cholesterol

Group	Physical activity	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 206)				
1	Mild	-1.281	2.171	No two groups are significantly different
2	Moderate	2.649	1.642	
3	Heavy	4.129	3.212	
Coconut oil + Kernel Stage (DF = 236)				
1	Mild	0.029	1.739	No two groups are significantly different
2	Moderate	-4.396	2.102	
3	Heavy	-2.723	5.627	
Groundnut oil Stage (DF = 71)				
1	Mild	0.797	3.327	No two groups are significantly different
2	Moderate	0.394	3.221	
3	Heavy	-4.750	5.173	
Groundnut oil + Kernel Stage (DF = 178)				
1	Mild	-0.412	2.087	No two groups are significantly different
2	Moderate	1.169	1.557	
3	Heavy	4.622	4.519	

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on LDL cholesterol in the three groups. Consumption of Groundnut oil and Groundnut oil + Kernel produced no significant difference in the effect on LDL Cholesterol in the subjects with mild, moderate and heavy physical activity.

3.16.3 Serum HDL cholesterol

Table 117
HDL Cholesterol

Group	Physical activity	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Mild	1.355	1.034	No two groups are significantly different
2	Moderate	0.500	0.647	
3	Heavy	0.535	1.466	
Coconut oil + Kernel Stage (DF = 236)				
1	Mild	0.869	0.830	No two groups are significantly different
2	Moderate	1.870	0.678	
3	Heavy	0.599	1.566	
Groundnut oil Stage (DF = 71)				
1	Mild	-1.810	0.929	No two groups are significantly different
2	Moderate	-0.861	1.177	
3	Heavy	-3.260	2.766	
Groundnut oil + Kernel Stage (DF = 177)				
1	Mild	0.226	0.949	No two groups are significantly different
2	Moderate	0.583	0.619	
3	Heavy	1.267	1.187	

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on HDL Cholesterol in the three groups. Groundnut oil and Groundnut oil + Kernel also produced no significant difference in HDL Cholesterol in the subjects with mild, moderate and heavy physical activity.

3.16.4 Serum triglycerides

Table 118
Triglycerides

Group	Physical activity	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Mild	-5.203	4.323	No two groups are significantly different
2	Moderate	-7.442	2.753	
3	Heavy	-8.963	4.062	
Coconut oil + Kernel Stage (DF = 236)				
1	Mild	-4.099	3.460	No two groups are significantly different
2	Moderate	2.398	2.650	
3	Heavy	1.315	9.918	
Groundnut oil Stage (DF = 71)				
1	Mild	7.097	4.066	No two groups are significantly different
2	Moderate	-8.029	4.942	
3	Heavy	-3.386	22.543	
Groundnut oil + Kernel Stage (DF = 161)				
1	Mild	12.807	5.012	Gr. 1 is significantly different when compared to Gr. 2
2	Moderate	-0.693	3.273	
3	Heavy	-0.230	5.557	

There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on triglycerides in the three groups. The effect of consumption of Groundnut oil on triglycerides were similar in the three groups, while triglycerides increased with Groundnut oil + Kernel in those with mild physical activity, when compared to moderate physical activity.

3.17 Comparison on the basis of income

3.17.1 Serum total cholesterol

Table 119
Total Cholesterol

Groups	Income	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Low	0.321	2.248	Gr. 2 is significantly different compared to Gr. 3
2	Medium	2.358	1.379	
3	High	-11.006	4.709	
Coconut oil + Kernel Stage (DF = 236)				
1	Low	5.901	6.186	No two groups are significantly different
2	Medium	-1.326	1.252	
3	High	-6.478	4.121	
Groundnut oil Stage (DF = 71)				
1	Low	-6.944	5.695	No two groups are significantly different
2	Medium	-2.311	2.236	
3	High	-2.762	2.088	
Groundnut oil + Kernel Stage (DF = 178)				
1	Low	6.857	5.113	No two groups are significantly different
2	Medium	2.327	1.322	
3	High	-0.436	4.224	

Total Cholesterol increased in the medium income group compared with high income group with Coconut oil, while there was no significant difference in the effect of Coconut oil + Kernel on total cholesterol in the three groups. The effect of Groundnut oil and Groundnut oil + Kernel on total cholesterol were similar in the low, medium and high income groups.

3.17.2 Serum LDL cholesterol

Table 120
LDL Cholesterol

Group	Income	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Low	0.788	2.713	Gr. 2 is significantly different when compared to Gr. 3
2	Medium	2.779	1.380	
3	High	-11.040	5.698	
Coconut oil + Kernel Stage (DF = 236)				
1	Low	6.849	5.651	No two groups are significantly different
2	Medium	-2.934	1.507	
3	High	-8.761	3.890	
Groundnut oil Stage (DF = 71)				
1	Low	-4.644	6.077	No two groups are significantly different
2	Medium	0.690	2.391	
3	High	0.171	2.234	
Groundnut oil + Kernel Stage (DF = 178)				
1	Low	10.215	5.142	No two groups are significantly different
2	Medium	0.813	1.294	
3	High	-3.559	3.251	

LDL Cholesterol increased in medium income group compared to the high income with Coconut oil. There was no significant difference in the effect of Coconut oil + Kernel, Groundnut oil and Groundnut oil + Kernel on LDL Cholesterol in the low, medium and high income groups.

3.17.3 Serum HDL cholesterol

Table 121
HDL Cholesterol

Group	Income	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Low	0.781	1.142	No two groups are significantly different
2	Medium	0.805	0.601	
3	High	0.245	1.726	
Coconut oil + Kernel Stage (DF = 236)				
1	Low	-0.775	1.506	Gr. 3 is significantly different when compared to Gr. 1 and Gr. 2
2	Medium	1.302	0.539	
3	High	6.592	1.843	
Groundnut oil Stage (DF = 71)				
1	Low	-1.249	2.378	No two groups are significantly different
2	Medium	-2.016	0.835	
3	High	-1.941	0.784	
Groundnut oil + Kernel Stage (DF = 177)				
1	Low	-1.468	1.758	No two groups are significantly different
2	Medium	0.731	0.533	
3	High	-1.823	1.133	

HDL cholesterol increased in the high income group when compared to low and medium income group in Coconut oil + Kernel stage. Consumption of Coconut oil produced no significant difference in HDL cholesterol in the low, medium and high income groups.

HDL Cholesterol were also similar with Groundnut oil and Groundnut oil + Kernel in the three groups.

3.17.4 Serum triglycerides

Table 122
Triglycerides

Group	Income	Mean value	Standard error	Significance at 5% level
Coconut oil Stage (DF = 205)				
1	Low	-12.319	3.060	No two groups are significantly different
2	Medium	-6.441	2.530	
3	High	1.417	8.058	
Coconut oil + Kernel Stage (DF = 236)				
1	Low	-4.728	8.568	No two groups are significantly different
2	Medium	1.090	2.197	
3	High	-16.999	6.472	
Groundnut oil Stage (DF = 71)				
1	Low	-2.380	16.428	Not significantly different
2	Medium	-2.695	3.655	
3	High	—	—	
Groundnut oil + Kernel Stage (DF = 161)				
1	Low	-4.588	6.449	Gr. 3 is significantly different when compared to Gr.2
2	Medium	2.573	2.500	
3	High	24.532	22.787	

Triglycerides increased in the high income group when compared to medium income group in Groundnut oil + Kernel stage. There was no significant difference in the effect of Coconut oil and Coconut oil + Kernel on triglycerides in the three groups.

Consumption of Groundnut oil produced similar effect on triglycerides in the low and medium income groups.

3.18 District wise comparison of subjects

3.18.1 Serum total cholesterol

Table 123
Total Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Coconut oil Stage (DF = 205)								
Trivandrum	1	7.540	2.184		S		S	S
Kollam	2	-1.370	1.669					S
Alapuzha	3	15.954	2.441	S	S		S	S
Kottayam	4	-4.857	3.010					
Ernakulam	5	-11.965	4.405					
Coconut oil + Kernel Stage (DF = 236)								
Trivandrum	1	3.065	1.643		S			
Kollam	2	-3.971	1.749					
Alapuzha	3	8.210	3.879		S			S
Kottayam	4	-1.525	3.816					
Ernakulam	5	-6.841	6.780					

(S) denotes pairs of groups significantly different at the 0.050 level.

Coconut oil stage

Cholesterol increasing effect in decreasing order:-
Ernakulam (-) → Kottayam (-)→Kollam(-)→Trivandrum(+)->Alapuzha(+)

Coconut oil + kernel stage

Cholesterol increasing effect in decreasing order was:-
Ernakulam (-) → Kollam (-)→Kottayam(-)→Trivandrum(+)->Alapuzha(+)

Table 124
Total Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Groundnut oil Stage (DF = 71)								
Trivandrum	1	-1.454	4.120					
Kollam	2	-3.231	2.443					
Alapuzha	3	-	-					
Kottayam	4	-	-					
Ernakulam	5	-	-					
Groundnut oil + Kernel Stage (DF = 178)								
Trivandrum	1	4.248	2.039			S		
Kollam	2	-0.023	1.929					
Alapuzha	3	-6.876	3.662					
Kottayam	4	12.182	3.055	S	S	S		S
Ernakulam	5	-0.436	4.223					

(S) denotes pairs of groups significantly different at the 0.050 level.

Groundnut oil stage

No significant difference in the effect of Groundnut oil on total cholesterol in the subjects from Trivandrum and Kollam district.

Groundnut oil + kernel stage

Cholesterol increasing effect in decreasing order:-
Alapuzha(-)→Ernakulam(-)→Kollam(-)→Trivandrum(+)->Kottayam(+)

3.18.2 Serum LDL cholesterol

Table 125
LDL Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Coconut oil Stage (DF = 205)								
Trivandrum	1	9.194	2.044		S		S	S
Kollam	2	-1.886	1.678					
Alapuzha	3	17.116	2.882		S		S	S
Kottayam	4	-4.132	3.119					
Ernakulam	5	-11.550	5.226					
Coconut oil + Kernel Stage (DF = 236)								
Trivandrum	1	-1.544	3.722					
Kollam	2	-2.635	1.663					
Alapuzha	3	2.805	5.083					
Kottayam	4	-5.993	4.669					
Ernakulam	5	-8.838	3.552					

(S) denotes pairs of groups significantly different at the 0.050 level.

Coconut oil stage

LDL Cholesterol increasing effect in decreasing order:-
Ernakulam(-)→Kottayam(-)→Kollam(-)→Trivandrum(+)->Alapuzha(+)

Coconut oil + kernel stage

No significant difference in the subjects in the different districts.

Table 126
LDL Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Groundnut oil Stage (DF = 71)								
Trivandrum	1	7.377	4.371					
Kollam	2	-2.412	2.530					
Alapuzha	3	-	-					
Kottayam	4	-	-					
Ernakulam	5	-	-					
Groundnut oil + Kernel Stage (DF = 178)								
Trivandrum	1	0.599	2.165					
Kollam	2	-1.468	1.992					
Alapuzha	3	-4.809	3.579					
Kottayam	4	12.113	2.723	S	S	S		S
Ernakulam	5	-3.559	3.251					

(S) denotes pairs of groups significantly different at the 0.050 level.

Groundnut oil stage

No significant differnce in the subjects in the different districts.

Groundnut oil + kernel stage

LDL Cholesterol increasing effect in decreasing order:-
Alapuzha(-)→Ernakulam(-)→Kollam(-)→Trivandrum(+)->Kottayam(+)

3.18.3 Serum HDL cholesterol

Table 127
HDL Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Coconut oil Stage (DF = 205)								
Trivandrum	1	-0.482	0.716					
Kollam	2	2.995	0.857	S			S	
Alapuzha	3	-0.313	1.684					
Kottayam	4	-2.659	1.059					
Ernakulam	5	-0.224	1.576					
Coconut oil + Kernel Stage (DF = 236)								
Trivandrum	1	1.599	0.827					
Kollam	2	-0.694	0.750					
Alapuzha	3	5.501	1.203	S	S			
Kottayam	4	4.230	1.326		S			
Ernakulam	5	6.748	1.690	S	S			

(S) denotes pairs of groups significantly different at this 0.50 level.

Coconut oil stage

HDL Cholesterol increasing effect in decreasing order:-
Kottayam(-)→Trivandrum(-)→Alapuzha(-)→Ernakulam(-)→Kollam(+)

Coconut oil + kernel stage

HDL Cholesterol increasing effect in decreasing order:-
Kollam(-)→Trivandrum(+)->Kottayam(+)->Alapuzha(+)->Ernakulam(+)

Table 128
HDL Cholesterol

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Groundnut oil Stage (DF = 71)								
Trivandrum	1	-6.477	1.302					
Kollam	2	-0.315	0.878					
Alapuzha	3	-	-					
Kottayam	4	-	-					
Ernakulam	5	-	-					
Groundnut oil + Kernel Stage (DF = 177)								
Trivandrum	1	2.763	0.991			S		
Kollam	2	0.540	0.804			S		
Alapuzha	3	-3.501	1.406					
Kottayam	4	0.739	1.004			S		
Ernakulam	5	-1.823	1.333					

(S) denotes pairs of group significantly different at the 0.050 level

Groundnut oil stage

No significant difference in the subjects from different districts.

Groundnut oil + kernel stage

HDL Cholesterol increasing effect in decreasing order:-
Alapuzha(-)→Ernakulam(-)→Kollam(+)->Kottayam(+)->Trivandrum(+)

3.18.4 Serum triglycerides

Table 129
Triglycerides

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Coconut oil Stage (DF =205)								
Trivandrum	1	-5.167	3.093					
Kollam	2	-12.987	2.926					
Alapuzha	3	-0.860	6.795					
Kottayam	4	0.702	7.132		S			
Ernakulam	5	-0.933	7.723					
Coconut oil + Kernel Stage (DF = 236)								
Trivandrum	1	-1.428	4.410					
Kollam	2	-1.137	2.595					
Alapuzha	3	-2.434	7.145					
Kottayam	4	14.569	7.070	S	S			S
Ernakulam	5	-19.591	6.452					

(S) denotes pairs of group significantly different at the 0.050 level.

Coconut oil stage

Triglycerides increasing effect in decreasing order:-
Kollam(-)→Trivandrum(-)→Eranakulam(-)→Alapuzha(-)→Kottayam(+)
Other districts showed comparable effects.

Coconut oil + kernel stage

Triglycerides increasing effect in decreasing order was:-
Ernakulam(-)→Alapuzha(-)→Trivandrum(-)→Kollam(-)→Kottayam(+)

Table 130
Triglycerides

District	Group	Mean value	Standard error	Groups significantly different				
				1	2	3	4	5
Groundnut oil Stage (DF =71)								
Trivandrum	1	-10.850	5.301					
Kollam	2	0.270	4.491					
Alapuzha	3	-	-					
Kottayam	4	-	-					
Ernakulam	5	-	-					
Groundnut oil + Kernel Stage (DF = 161)								
Trivandrum	1	-1.920	4.944					
Kollam	2	2.589	2.615					
Alapuzha	3	4.562	6.072					
Kottayam	4	3.716	8.334					
Ernakulam	5	24.532	22.787					

Consumption of Groundnut oil and Groundnut oil + Kernel produced no significant difference in triglycerides levels in the subjects from different districts.

Discussion

The subjects studied were in most cases, taking Coconut oil but when cheaper oils like Palm oil were available, they used the latter in place of Coconut oil. In other cases, the subjects had changed over to unsaturated fats like Sunflower oil or Groundnut oil because of the fear that Coconut oil may increase blood cholesterol. Thus they were consuming either Coconut oil with Palm oil or Sunflower oil/Groundnut oil as the free oil. In every case, because of the consumption of fresh coconut kernel, they were also consuming Coconut oil. Thus the subjects were on a mixed fat diet before the study.

The salient features when whole subjects are taken into consideration are (1) Coconut oil consumption did not increase total cholesterol or LDL cholesterol, (2) did not reduce HDL cholesterol (3) lowered triglycerides and (4) did not alter LDL cholesterol/HDL cholesterol ratio. Considering the fact that the risk factors for coronary artery disease (CAD) in Kerala population are not an increase in total cholesterol or LDL cholesterol, but low HDL cholesterol, high LDL cholesterol/HDL cholesterol ratio and high triglycerides, these results indicate that Coconut oil does not contribute to CAD.

Consumption of fresh coconut kernel along with Coconut oil, as is the invariable practise in Kerala population, produced lower total cholesterol and LDL cholesterol, higher HDL cholesterol, and lower LDL cholesterol/HDL cholesterol ratio, all indicating the beneficial effect of coconut kernel. But triglycerides were increased by coconut kernel consumption.

Compared to Groundnut oil, even though Coconut oil caused higher total cholesterol, HDL cholesterol was higher with Coconut oil, and LDL cholesterol/HDL cholesterol ratio and triglycerides were lower, all definite advantages of Coconut oil over Groundnut oil.

It is interesting to note that consumption of coconut kernel with Groundnut oil, did not lower total cholesterol or LDL cholesterol, but as in the case of Coconut oil, it did elevate HDL cholesterol and lower LDL cholesterol/HDL cholesterol ratio. Regarding triglycerides, coconut kernel did not produce any increase with Groundnut oil, as it did with Coconut oil.

The effect on blood lipid parameters is not due to dietary fat alone, but depends on other dietary factors and the life style of the individual. Vegetarian/Non vegetarian diet, physical activity, cigarette smoking, alcohol consumptions, age, sex etc. are also important in this respect as is the incidence of pathological state like diabetes, hypertension etc. The final effect on blood lipids is thus the result of interactions of all these factors.

In view of this, an attempt has been made to find out the effect of consumption of Coconut oil and coconut kernel in various categories of populaion and the salient points emerging from this analysis are indicated below.

4.1 Subjects with normal serum cholesterol (diabetics, hypertensive and subjects with cholesterol above 230 mg/100 ml excluded)

Consumption of Coconut oil alone without coconut kernel did not raise total cholesterol or LDL cholesterol, but HDL cholesterol was higher in these subjects when on Coconut oil, and triglycerides lower, indicating the beneficial effect of Coconut oil.

Consumption of coconut kernel with Coconut oil caused lowering of total cholesterol and LDL cholesterol and LDL cholesterol/HDL cholesterol ratio in these subjects again indicating the beneficial effect of coconut kernel.

Compared to Groundnut oil, Coconut oil produced higher total cholesterol, but also higher HDL cholesterol, lower triglycerides and comparable LDL cholesterol. The higher total cholesterol is due to increase in HDL cholesterol. LDL cholesterol/HDL cholesterol ratio was lower with Coconut oil.

In these subjects consumption of Coconut oil was beneficial as compared to consumption of Groundnut oil from the point of view of higher HDL cholesterol, lower triglycerides and lower LDL cholesterol/HDL cholesterol ratio.

Consumption of coconut kernel with Coconut oil was more advantages than with Groundnut oil since HDL cholesterol was higher and the LDL cholesterol/HDL cholesterol ratio lower in the former case.

4.2 Hypercholesterolemic subjects (cholesterol above 230 mg/100 ml)

Consumption of Coconut oil did not elevate total cholesterol, LDL cholesterol or LDL cholesterol/HDL cholesterol ratio or triglycerides. Nor did it lower HDL cholesterol. Thus coconut oil does not appear to be harmful in these subjects. On the other hand, consumption of coconut kernel along with Coconut oil, raised HDL cholesterol, again indicating the beneficial effect of coconut kernel.

When compared to Groundnut oil, Coconut oil again had certain advantage, in that Groundnut oil caused a decrease in the beneficial HDL cholesterol while Coconut oil did not. Consumption of coconut kernel was more advantage with Coconut oil than with Groundnut oil, since in the former case, HDL cholesterol was raised. On the other hand, LDL cholesterol/HDL cholesterol ratio was raised with Groundnut oil + Kernel.

4.3 Vegetarians

Consumption of Coconut oil alone in these subjects did not increase total cholesterol, LDL cholesterol, triglycerides or the LDL cholesterol/HDL cholesterol ratio. It also did not lower HDL cholesterol. All these indicate that consumption of Coconut oil does not adversely affect the vegetarians.

But consumption of coconut kernel along with Coconut oil did not confer any additional advantage in the vegetarians.

Coconut oil alone could not be compared to Groundnut oil alone, since these subjects opted out of the trial with Groundnut oil alone. But consumption of coconut kernel with Coconut oil was more advantageous, than with Groundnut oil, since in the former case there was a decrease in LDL cholesterol/HDL cholesterol ratio.

4.4 Non vegetarians

In these subjects also, consumption of Coconut oil alone did not cause any increase in total cholesterol, LDL cholesterol or LDL cholesterol/HDL cholesterol ratio or any decrease in HDL cholesterol. It had a beneficial effect in that it lowered triglycerides in these subjects. Consumption of coconut kernel with Coconut oil had an advantage in these subjects since it decreased total cholesterol, LDL cholesterol, LDL cholesterol/HDL cholesterol ratio and increased HDL cholesterol. Consumption of Coconut oil had several advantages in these subjects when compared to consumption of Groundnut oil, HDL cholesterol was higher, triglycerides lower and LDL cholesterol/HDL cholesterol ratio lower with Coconut oil.

Consumption of coconut kernel with Coconut oil again had additional advantage when compared to the consumption of coconut kernel with Groundnut oil in that total cholesterol and LDL cholesterol were lower with Coconut oil only in this case.

4.5 Young subjects (age 18–40 years)

Coconut oil consumption did not increase total cholesterol, LDL cholesterol or LDL cholesterol/HDL cholesterol ratio in these subjects. Nor did it lower HDL

cholesterol. On the otherhand it had a beneficial effect since it lowered triglycerides.

Consumption of coconut kernel with Coconut oil in these subjects had a beneficial effect since it produced lower total cholesterol, LDL cholesterol, higher HDL cholesterol and lower LDL cholesterol/HDL cholesterol ratio.

Coconut oil had several beneficial effects when compared to Groundnut oil, since the former produced higher HDL cholesterol, lower LDL cholesterol/HDL cholesterol ratio and lower triglycerides, when compared to Groundnut oil. On the other hand, it produced higher total cholesterol.

4.6 Older subjects (age 41–65 years)

Coconut oil consumption did produce an increase in total cholesterol in these subjects, but there was neither an increase in LDL cholesterol or LDL cholesterol/HDL cholesterol ratio nor a decrease in HDL cholesterol. On the otherhand triglycerides were lower, which was beneficial.

Consumption of coconut kernel with Coconut oil had a beneficial effect in these subjects in that it lowered total cholesterol, LDL cholesterol and LDL cholesterol/HDL cholesterol ratio while it increased HDL cholesterol.

Consumption of Coconut oil had an advantage over that of Groundnut oil, in that triglycerides were lower in the former case.

Consumption of coconut kernel had an additional advantage with Coconut oil when compared to Groundnut oil, in that total cholesterol was lower with Coconut oil.

4.7 Male subjects

Consumption of Coconut oil in male subjects did not increase total cholesterol, LDL cholesterol, triglycerides or the LDL cholesterol/HDL cholesterol ratio but it had an additional benefit in that it increased HDL cholesterol.

Consumption of coconut kernel with Coconut oil had a beneficial effect in these subjects with respect to LDL cholesterol and LDL cholesterol/HDL cholesterol ratio.

4.8 Female subjects

Consumption of Coconut oil in female subjects did not produce any increase in total cholesterol or in the LDL cholesterol/HDL cholesterol ratio nor any decrease in HDL cholesterol, but LDL cholesterol was higher. On the otherhand, it produced lower triglycerides.

Consumption of coconut kernel with Coconut oil, lowered total cholesterol and LDL cholesterol as well as LDL cholesterol/HDL cholesterol ratio and increased HDL cholesterol, all beneficial effects.

When compared to Groundnut oil, Coconut oil has several advantages in that it produced higher HDL cholesterol, lower triglycerides and lower LDL cholesterol/HDL cholesterol ratio.

Consumption of coconut kernel was more advantageous with Coconut oil than those with Groundnut oil in that it also increased HDL cholesterol, lowered LDL cholesterol and triglycerides with Coconut oil.

4.9 Fishermen community

Consumption of Coconut oil in these subjects with predominant consumption of fish was not in any way harmful since it did not increase total cholesterol, LDL cholesterol, LDL cholesterol/HDL cholesterol ratio or decrease HDL cholesterol. On the other hand it produced lower triglycerides.

4.10 Nonvegetarians who consume meat/beef daily

Consumption of Coconut oil did not increase total cholesterol, LDL cholesterol or triglycerides or LDL cholesterol/HDL cholesterol ratio in these subjects, but it did decrease HDL cholesterol, a trend which is not desirable.

Consumption of coconut kernel along with Coconut oil however corrected this tendency. It increased HDL cholesterol and lowered LDL cholesterol. More significantly it lowered LDL cholesterol/HDL cholesterol ratio.

Since sufficient number of volunteers were not available in the Groundnut oil consumption stage, no comparison between Coconut oil and Groundnut oil is possible.

But consumption of coconut kernel was more advantageous with Coconut oil than with Groundnut oil in these subjects.

4.11 Subjects with low triglycerides (below 70 mg/100 ml)

Coconut oil consumption in this group did not increase total cholesterol, LDL cholesterol, triglycerides or LDL cholesterol/HDL cholesterol ratio nor did it decrease HDL cholesterol. The beneficial effect of coconut kernel in this group was manifested in higher HDL cholesterol, lower LDL cholesterol and lower LDL cholesterol/HDL cholesterol ratio.

Groundnut oil behaved similarly to Coconut oil except that Coconut oil produced lower triglycerides. The effect of coconut kernel consumptions was similar in both cases.

4.12 Subjects with high triglycerides (above 180 mg/100 ml)

Consumption of Coconut oil did not cause any increase in total cholesterol, LDL cholesterol or decrease in HDL cholesterol, but it has positive beneficial effect in that it decreased triglycerides and lowered LDL cholesterol/HDL cholesterol ratio. However consumption of coconut kernel with Coconut oil did not confer any additional advantage in this group.

Coconut oil consumption had an advantage over Groundnut oil consumption in that Coconut oil caused lower triglycerides.

The consumption of coconut kernel with Coconut oil was more advantageous since it caused increase in HDL cholesterol than with Groundnut oil.

4.13 Subjects with caloric intake less than 2000 K.calories

Consumption of Coconut oil had no deleterious effect on any lipid parameters except that it increased LDL cholesterol.

Coconut kernel consumption confined a positive effect with Coconut oil in that it caused decreased total cholesterol, higher HDL cholesterol, lower LDL cholesterol, and lower LDL cholesterol/HDL cholesterol ratio.

Coconut oil produced higher total cholesterol, higher LDL cholesterol than Groundnut oil, but HDL cholesterol was higher with Coconut oil.

4.14 Subjects with caloric intake above 2000 K.calories

Coconut oil consumption did not produce any deleterious effect in this group. On the other hand a beneficial effect was manifested in a decrease in triglycerides.

The beneficial effect of coconut kernel on Coconut oil was manifested in lower LDL cholesterol and lower LDL cholesterol/HDL cholesterol ratio.

Compared to Groundnut oil, Coconut oil was more beneficial in that it increased HDL cholesterol, lowered triglycerides and also lowered LDL cholesterol/HDL cholesterol ratio in this group.

The effect of coconut kernel was however comparable in Coconut oil and Groundnut oil.

4.15 Comparison of the effect of coconut oil and coconut oil + kernel in various groups (intergroup comparison)

4.15.1 Young Vs old subjects

Coconut oil alone and with coconut kernel showed similar effects in both young and old subjects. Similar was the case with Groundnut oil and Groundnut oil +

Kernel.

4.15.2 Male subjects Vs female subjects

Coconut oil alone and with coconut kernel manifested similar effect in both male and female. Only difference was in the case of triglycerides, where the decrease in triglycerides was more in females.

Groundnut oil and Groundnut oil + Kernel also produced similar effects on all lipid parameters in both groups.

4.15.3 Vegetarian subjects Vs nonvegetarian subjects

Similar effects were observed with Coconut oil alone, Coconut oil + Kernel, and Groundnut oil + Kernel in both vegetarian and nonvegetarian.

4.15.4 Subjects with low triglycerides (below 70 mg/100 ml) Vs those with high triglycerides (above 180 mg/100 ml)

The difference in the two groups was (i) Coconut oil produced a decrease in total cholesterol and triglycerides in the high triglyceride group and an increase in low triglyceride group (ii) Coconut oil produced an increase in HDL cholesterol in the high triglyceride group and a decrease in the low triglyceride group.

4.15.5 Subjects with low fat consumption (10–15%) Vs subjects with high fat consumption (above 20%)

The difference in the two group was (i) increase in total cholesterol was more with Groundnut oil + Kernel in the high fat group. (ii) increase in triglycerides with Coconut oil in the high fat group, while there was a decrease in triglycerides in the low fat group.

4.15.6 Subjects with low caloric intake (below 1700 K.calories) Vs subjects with high caloric intake (above 2500 K.calories)

The only difference noted was that increase in total cholesterol was more with Groundnut oil in the subjects with high calorie intake.

4.15.7 Smokers Vs nonsmokers

The difference in the effect observed with smokers and nonsmokers was an increase in total cholesterol in smokers and a decrease in total cholesterol in nonsmokers with Coconut oil + Kernel.

4.15.8 Subjects who consume alcohol Vs abstainers

The only difference in the two groups was greater increase in triglycerides with Groundnut oil + Kernel in subjects who consume alcohol.

4.15.9 Nonvegetarian Vs fishermen

No significant difference in the effect on any parameter was noticed in the two groups.

4.15.10 Subjects with hypertension Vs subjects with normal blood pressure

The difference noted in the two group was greater increase in total cholesterol and LDL cholesterol with Coconut oil in hypertensive subjects.

4.15.11 Diabetic subjects Vs non-diabetic subjects

The following differences were noted:

- (i) decrease in LDL cholesterol with Coconut oil + Kernel was greater in the diabetic subjects.
- (ii) increase in HDL cholesterol was greater in the diabetics with Coconut oil + Kernel.
- (iii) Coconut oil produced increase in triglycerides in diabetics and a decrease in non-diabetics.
- (iv) the increase in triglycerides was greater with Groundnut oil + Kernel in diabetics.

4.15.12 Subjects with low fish consumption (below 150 g/day) Vs those with high fish consumption (above 150 g/day)

The differences noted were

- (i) greater decrease in total cholesterol in subjects with high fish consumption with Coconut oil + Kernel.
- (ii) decrease in HDL cholesterol with Coconut oil + Kernel in subjects with high fish consumption and an increase in low fish consumption group.

4.15.13 Subjects who consume meat/beef daily Vs those who do not

The following differences were noted:

- (i) decrease in total cholesterol with Coconut oil in those who consume meat/beef daily.
- (ii) greater increase in total cholesterol in the subjects who consume meat/beef daily with Groundnut oil + Kernel.
- (iii) Lower LDL cholesterol with Coconut oil in those who consume meat/beef daily.
- (iv) Higher LDL cholesterol with Groundnut oil + Kernel in those who consume meat/beef daily.
- (v) decrease in HDL cholesterol with Coconut oil in those who consume meat/beef daily.
- (vi) greater increase in HDL cholesterol with Coconut oil + Kernel in those who consume meat/beef daily.
- (vii) Triglycerides were higher in those who consume meat/beef daily with Coconut oil + Kernel.

4.15.14 Subjects with mild physical activity Vs those with moderate and heavy physical activity

The only difference was that triglycerides increased with Groundnut oil + Kernel in those with mild physical activity.

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Conclusions

- Consumption of Coconut oil in the general population did not elevate total cholesterol, LDL cholesterol or LDL cholesterol/HDL cholesterol ratio. Nor did it reduce HDL cholesterol, but lowered triglycerides.

These data absolve coconut oil of any harmful effects. On the other hand, it reduces one of the risk factors for Coronary Artery Disease (CAD) in Kerala namely elevated serum triglycerides.

- Consumption of coconut kernel with coconut oil had a beneficial effect in that it reduced total cholesterol and lowered triglycerides and more important it raised HDL cholesterol levels and lowered LDL cholesterol/HDL cholesterol ratio.
- These data indicate that dietary practice in the Kerala population of consuming fresh coconut kernel and coconut oil instead of producing harmful effects as far as incidence of coronary artery disease is concerned, reduces the risk of coronary artery disease. Groundnut oil was also neutral in its effects, but coconut oil has several advantages over groundnut oil in spite of the fact that the latter produced lower serum cholesterol, namely coconut oil produced higher HDL cholesterol, lower triglycerides and lower LDL cholesterol/HDL cholesterol ratio. The increase in total cholesterol with coconut oil is a reflection of the increase in the beneficial HDL cholesterol.
- Consumption of too much coconut kernel may lead to higher triglycerides. This may be related to the invisible fat present in the coconut kernel (polyunsaturated fat). Polyunsaturated fat is known to lead to increased triglyceride levels.
- The beneficial effect of coconut kernel may be due to two factors present in it, namely the coconut kernel protein and the dietary fiber, both of which confer beneficial effects on blood lipid parameters.

- Consumption of coconut oil and coconut kernel had only beneficial effects not only in subjects with normal cholesterol, but also in those with elevated serum cholesterol.
- In both vegetarian and non vegetarian coconut oil and coconut kernel consumption showed positive beneficial effect.
- The beneficial effect for coconut oil and coconut kernel seen in young subjects is also seen in old subjects.
- Both male and female subjects had beneficial effects when on coconut oil and coconut kernel, but the decrease in triglycerides on coconut oil was more in females than in the male.
- Coconut oil and coconut kernel consumption had only beneficial effect in diabetic subjects since there was decrease in LDL cholesterol in diabetic when compared to the non diabetic, greater increase in HDL cholesterol, but one disadvantage was increase in triglyceride in the diabetic subjects.
- Smokers showed an increase in total cholesterol when on coconut oil and coconut kernel when compared to nonsmokers.
- Subjects who consume fish predominantly had a disadvantage with coconut oil in that HDL cholesterol was decreased presumably due to the effect of ω -3 fatty acids present in fish.
- Subjects who consume beef predominantly had also an advantage with coconut oil in that total cholesterol was lower as also LDL cholesterol, but the disadvantage with coconut oil in these subjects was a decrease in HDL cholesterol.
- Coconut oil consumption had also beneficial effect in subjects with elevated triglycerides in that it produced decrease in triglycerides and increase in HDL cholesterol.
- Subjects with high fat consumption had a disadvantage with coconut oil in that triglycerides increased in this group.

CHAPTER 6

Effect of Coconut Oil and Coconut Kernel on Serum and Tissue Lipid Profile in Rats

Preliminary to studies on the effect of consumption of coconut oil and coconut kernel on serum lipid profile in human volunteers, a study was undertaken on their effect in experimental animals. The results of these studies using rats are discussed in this section.

6.1 Materials and methods

Analysis of coconut kernel: Analysis of fresh coconut kernel was carried out as described in AOAC¹⁴ and dietary fiber was estimated by the method of Goering and Van Soest.¹⁵

The Composition of Coconut kernel obtained was:

Coconut oil – 40.08%, Carbohydrate – 12.60%, Protein – 5.17% and fiber – 7.24%

6.2 Animal experiments

Male albino rats (Sprague - Dawley strain, weight 80–100 g) were divided into five groups of ten rats each and fed as follows.

Group 1: Rats fed groundnut oil

Group 2: Rats fed coconut oil

Group 3: Rats fed Coconut Kernel

Group 4: Rats fed groundnut oil + Coconut Kernel

Group 5: Rats fed coconut oil + Coconut Kernel

The diet used had the following composition (g/100g)

Diet	Gr: 1	Gr: 2	Gr: 3	Gr: 4	Gr: 5
1. Corn starch	64	64	60.85	62.42	62.42
2. Casein	16	16	14.71	15.35	15.35
3. groundnut oil	10	00	00.00	5.00	00.00
4. coconut oil	00	10	00.00	00.00	5.00
5. Coconut Kernel	00	00	25.00*	12.50**	12.50**
6. Salt mixture	4.00	4.00	4.00	4.00	4.00
7. Vitamin mixture	1.00	1.00	1.00	1.00	1.00
8. Cellulose	5.00	5.00	3.19	4.08	4.08

*Contains 10 g of fat

**contains 5 g of fat

The rats were housed individually in polypropylene cages in rooms maintained at 25±1°C. The diet consumption was adjusted to be the same in the five groups. Water was available *ad libitum*. The duration of the experiment was 90 days. At the end of this period, they were deprived of food overnight, killed by decapitation and blood and tissues were removed to ice cold containers for the estimation of various lipids. The serum and tissues were extracted by Folch’s procedure.¹⁶ Total cholesterol was estimated by the mehod of Abell *et al.* ¹⁷, triglycerides by the method of Van Handel and Zilversmit¹⁸ and HDL cholesterol and VLDL + LDL cholesterol by phosphotungstate precipitation method.¹⁹ The results have been subjected to statistical analysis using students ‘t’ test²⁰.

6.3 Results

6.3.1 Serum total cholesterol, HDL cholesterol and VLDL + LDL cholesterol

Table 1
Concentration of serum cholesterol
(mg/100 ml)

Group	Total Cholesterol	HDL Cholesterol	VLDL + LDL Cholesterol
Gr: 1	93.41±2.3	57.52±1.67	35.89±1.04
Gr: 2	96.23±2.5	54.69±1.42	41.54±1.16
Gr: 3	70.46±1.97	41.85±1.00	28.61±0.83
Gr: 4	76.73±2.07	58.36±1.58	18.37±0.50
Gr: 5	82.08±2.22	50.30±1.41	31.78±0.89

Table 1a
't' values to Table 1

t between groups	Total Cholesterol	HDL Cholesterol	VLDL + LDL Cholesterol
1 and 2	0.83	1.29	3.63
1 and 3	7.58	8.05	5.47
1 and 4	5.39	0.37	15.18
1 and 5	3.54	3.30	3.00
2 and 3	8.10	7.37	9.07
2 and 4	6.01	1.73	18.34
2 and 5	4.23	2.19	6.68

6.3.2 Cholesterol in the aorta, heart and kidney

Table 2
Concentration of Cholesterol in the
Aorta, Heart and Kidney
(Values expressed as mg/100 g wet tissue)

Group	Aorta	Heart	Kidney
Gr: 1	338.26±9.10	208.68±5.84	657.49±17.75
Gr: 2	303.82±8.20	217.98±5.89	655.00±18.99
Gr: 3	327.73±8.52	189.01±5.10	668.87±19.39
Gr: 4	315.52±9.15	189.90±5.51	665.15±17.98
Gr: 5	312.94±9.08	192.84±5.01	670.10±18.09

Table 2a
't' values to Table 2

't' between groups	Aorta	Heart	Kidney
1 and 2	2.81	1.12	0.10
1 and 3	0.84	2.54	0.43
1 and 4	1.76	2.34	0.31
1 and 5	1.97	2.06	0.50
2 and 3	2.02	3.72	0.51
2 and 4	0.95	3.48	0.39
2 and 5	0.75	3.25	0.58

6.3.3 Cholesterol in the liver, adipose and brain

Table 3
Concentration of Cholesterol in the
Liver, Adipose and Brain
(Values expressed as mg/100 g wet tissue)

Group	Liver	Adipose	Brain
Gr: 1	573.15±16.05	95.13±2.83	2134.53±59.77
Gr: 2	407.70±11.00	106.39±3.09	2280.80±66.14
Gr: 3	414.92±12.03	73.29±1.98	1733.48±46.79
Gr: 4	422.43±11.41	81.74±2.37	1860.00±50.22
Gr: 5	404.06±11.72	90.88±2.64	1931.00±55.99

Table 3a
't' values to Table 3

't' between groups	Liver	Adipose	Brain
1 and 2	8.50	2.69	1.64
1 and 3	7.89	6.32	5.28
1 and 4	7.65	3.63	3.52
1 and 5	8.50	1.10	2.49
2 and 3	0.44	9.02	6.76
2 and 4	0.93	6.33	5.07
2 and 5	0.23	3.82	4.04

6.3.4 Triglycerides in the serum, heart, kidney and liver

Table 4
Concentration of Triglycerides in the
Serum, Heart, Kidney and Liver

Group	Serum (mg/100 ml)	Heart (mg/100 ml)	Kidney (mg/100 ml)	Liver (mg/100 ml)
Gr: 1	14.27±0.40	59.80±1.73	75.22±1.96	181.42±4.90
Gr: 2	12.09±0.35	50.62±1.27	56.04±1.51	187.06±5.24
Gr: 3	15.81±0.43	60.11±1.80	46.83±1.26	181.10±5.07
Gr: 4	15.29±0.42	55.33±1.44	51.57±1.50	190.96±5.16
Gr: 5	11.87±0.31	61.68±1.79	48.32±1.40	181.50±4.90

Table 4a
't' values to Table 4

't' between groups	Serum	Heart	Kidney	Liver
1 and 2	4.10	4.28	7.75	0.79
1 and 3	2.62	0.12	12.18	0.05
1 and 4	1.76	1.99	9.58	1.34
1 and 5	4.74	0.76	11.17	0.01
2 and 3	6.71	4.31	4.68	0.82
2 and 4	5.85	2.45	2.10	0.53
2 and 5	0.47	5.04	3.75	0.78

6.3.5 Triglycerides in the adipose, brain and aorta

Table 5
Concentration of Triglycerides
in the Adipose, Brain and Aorta
(Values expressed as mg/100 g wet tissue)

Group	Adipose	Brain	Aorta
Gr: 1	940.17±23.50	29.23±0.82	498.36±13.46
Gr: 2	1022.90±26.59	27.38±0.74	448.25±12.55
Gr: 3	1065.45±27.70	28.83±0.84	358.55±10.40
Gr: 4	1093.30±29.52	22.85±0.62	408.41±11.03
Gr: 5	945.23±27.41	24.67±0.69	420.55±11.78

Table 5a
't' values to Table 5

't' between groups	Adipose	Brain	Aorta
1 and 2	2.33	1.67	2.72
1 and 3	3.45	0.34	8.22
1 and 4	4.06	6.21	5.17
1 and 5	0.14	4.25	4.35
2 and 3	1.11	1.30	5.50
2 and 4	1.77	4.69	2.38
2 and 5	2.03	2.68	1.61

Results of Cholesterol and triglycerides in the serum and tissues are given in Tables 1 to 5. 't' values are given in Tables 1a to 5a.

6.4 Discussion

Coconut oil compared to groundnut oil did not produce any significant alteration in serum total cholesterol and HDL cholesterol, but VLDL + LDL was higher. On the otherhand serum triglycerides were significantly lower with coconut oil.

Consumption of fresh coconut kernel produced lower serum total cholesterol, HDL cholesterol and VLDL + LDL cholesterol when compared to both coconut oil and groundnut oil but serum triglycerides were higher.

The decrease in serum triglycerides and the neutral effect on serum total cholesterol and HDL cholesterol are indicative of the beneficial effect of coconut oil. With groundnut oil, although total cholesterol was comparable, triglycerides were elevated. Thus compared to groundnut oil, coconut oil has an advantage that it decreased serum triglycerides.

Unlike in humans rats are fairly resistant to atherosclerosis, since they have high HDL cholesterol. Coconut Kernel alone has an advantage over coconut oil or groundnut oil in that total cholesterol and VLDL + LDL cholesterol were lower, but serum triglycerides were higher with coconut kernel.

Inclusion of coconut kernel with coconut oil produced lower total cholesterol and VLDL + LDL cholesterol in the serum, but no significant alteration in serum triglycerides. Groundnut oil + Kernel also produced similar effects compared to groundnut oil alone.

Regarding tissue cholesterol levels, coconut oil produced lower levels compared to groundnut oil in the aorta and liver. Both coconut oil and groundnut oil produced comparable levels of total cholesterol in the heart, kidney and brain, but in the adipose tissue, groundnut oil produced lower levels than coconut oil. Coconut kernel produced lower total cholesterol in the heart and adipose tissue when compared to both coconut oil and groundnut oil. It also produced lower cholesterol in the liver when compared to groundnut oil. Inclusion of coconut kernel with coconut oil and groundnut oil produced lower cholesterol levels in the adipose tissue, when compared to Ground nut oil or coconut oil alone.

Thus as far as tissue cholesterol is concerned coconut oil had an advantage over groundnut oil in that it produced lower aortic cholesterol and liver cholesterol. Decrease in the aortic cholesterol with coconut oil is important since in atherosclerosis, it is the aortic cholesterol that is increased. Coconut kernel also reduced aortic cholesterol which again is important.

Regarding tissue triglycerides, coconut oil again produced lower triglycerides in the aorta when compared to groundnut oil. Coconut kernel also produced lower triglycerides when compared to coconut oil and groundnut oil, in the kidney and aorta. Coconut kernel produced higher triglycerides in the adipose tissue when compared to groundnut oil, but not significantly different when compared to coconut oil. However coconut kernel did not produce any significant difference in triglycerides in the liver when compared to coconut oil or groundnut oil.

Use of coconut kernel with coconut oil did not produce any significant alteration in the triglycerides level in the aorta when compared to coconut oil alone, but with groundnut oil produced lower triglycerides in this tissue. On the other hand, triglycerides were higher in the adipose tissue with groundnut oil + Kernel when compared to groundnut oil alone and but not with Coconut oil + kernel when compared to coconut oil alone.

6.5 Conclusions

- Even though both coconut oil and groundnut oil produced comparable total cholesterol in the serum, triglycerides were significantly lower with coconut oil and this is a definite advantage that coconut oil has over groundnut oil.
- It is the aortic cholesterol and triglycerides that are important in atherogenesis. Both these are raised in atherosclerosis. Here again coconut oil produced lower aortic cholesterol when compared to groundnut oil, indicating that it is not atherogenic.
- Use of Coconut kernel is beneficial in that it reduced total cholesterol in the serum, even though it increased serum triglycerides.
- Use of Coconut kernel with coconut oil or groundnut oil had beneficial effects in that total cholesterol was lower when compared to coconut oil or groundnut oil alone.

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APPENDICES

- Appendix A: Total Cholesterol
- Appendix B: Triglycerides
- Appendix C: HDL Cholesterol
- Appendix D: LDL Cholesterol
- Appendix E: Diet Data - Pre-trial Period

Explanation of terms used in the Appendices

Sl. No.	Serial No.
V. No.	Volunteer No.
Sex:	1. Male 2. Female
District	1. Trivandrum, 2. Kollam, 3. Alapuzha 4. Kottayam, 5. Ernakulam
Category:	1. Vegetarian, 2. non-vegetarian, 3. Fishermen community
Stage I:	Coconut Oil Stage
Stage II:	Coconut Oil + Coconut Kernel Stage
Stage III:	Groundnut Oil Stage
Stage IV:	Groundnut Oil + Coconut Kernel Stage
Initial:	Initial Value
Final:	Final Value
Kernel:	Coconut Kernel
% Contrib. of fat	Percentage Contribution of fat to calories

Units used for the parameters in the Appendices

Coconut kernel intake	– g/head/day
Oil derived from kernel	– g/head/day
Free oil intake	– g/head/day
Total fat intake*	– g/head/day
Protein intake	– g/head/day
Carbohydrate intake	– g/head/day
Fish consumption	– g/head/day
Total Caloric intake	– K.calories/head/day
(*Oil derived from kernel+free oil intake)	

APPENDIX A – Total Cholesterol (mg/100ml serum)

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1	1	44	222.00	247.00	218.18	240.00	213.00	225.00	195.00	210.00
2	2	2	33	184.00	188.00	152.72	172.00	160.00	165.00	170.00	150.00
3	3	1	50	263.15	250.70	239.99	250.60	248.00	250.72	260.00	245.00
4	4	2	40	210.52	216.78	218.18	220.20	191.10	223.05	230.00	220.00
5	5	2	18	151.00	170.75	167.27	176.00	133.30	125.00	162.00	170.00
6	6	1	44	173.00	180.16	170.54	172.00	168.88	175.00	200.00	190.00
7	7	2	37	212.00	225.40	210.90	208.00	177.77	190.00	210.00	220.00
8	8	2	40	244.00	265.26	254.54	256.00	248.80	283.50	260.00	240.00
9	10	2	18	133.33	145.30	134.00	142.00	137.00	140.00	135.00	130.00
10	11	2	50	263.00	280.00	285.00	288.00	269.76	272.52	252.92	275.00
11	13	1	21	133.00	160.00	160.00	141.66	130.23	115.70	127.65	140.00
12	14	2	24	160.00	190.00	175.00	179.00	167.44	131.24	159.14	175.00
13	15	2	28	190.00	200.00	195.00	190.23	176.74	189.09	182.97	180.00
14	16	2	39	162.00	188.00	180.00	180.45	172.09	157.94	156.59	170.00
15	17	1	18	165.00	189.00	160.00	175.70	152.67	139.63	134.46	165.00
16	18	2	39	165.00	185.00	180.00	176.40	167.44	158.00	178.72	185.00
17	20	1	26	156.52	151.60	155.55	130.40	120.00	150.00	165.00	153.48
18	21	1	20	134.35	134.63	130.11	140.90	136.00	160.00	140.00	139.53
19	24	1	52	222.22	245.45	277.26	272.72	285.00	271.20	250.00	262.24
20	25	1	38	170.00	181.00	220.00	214.00	204.00	181.81	204.54	214.63
21	26	2	29	210.00	193.00	220.00	224.39	195.55	176.74	200.00	214.63
22	27	1	30	183.20	190.00	176.74	193.10	193.50	200.27	160.00	184.26
23	28	1	23	190.00	165.00	176.74	165.00	164.80	192.48	186.66	186.36
24	31	2	25	170.00	155.00	160.00	156.32	141.93	139.45	173.33	164.54
25	32	1	22	180.00	205.00	186.00	156.32	167.74	173.70	143.33	140.90

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
26	33	1	19	152.00	140.00	139.50	156.32	141.93	159.62	146.66	140.90
27	34	1	34	170.00	170.00	167.00	188.50	167.74	187.79	213.33	227.27
28	37	1	29	205.00	175.00	186.00	170.11	174.19	187.79	200.00	204.50
29	38	1	42	157.10	180.00	206.89	211.26	200.00	195.45	167.86	213.63
30	41	1	21	130.00	130.00	140.00	128.62	126.45	145.53	146.86	145.45
31	42	1	25	165.00	180.00	167.40	160.91	167.48	164.31	160.00	159.09
32	51	2	37	195.00	172.72	140.00	147.12	180.64	165.00	200.00	181.81
33	56	2	56	200.00	200.00	250.00	195.00	220.00	210.00	218.18	200.00
34	57	1	62	185.70	192.65	224.30	191.00	200.00	203.01	190.90	186.36
35	58	1	33	190.66	181.99	235.20	209.20	190.00	206.45	186.36	204.54
36	61	1	40	190.47	171.87	160.00	177.00	190.00	175.48	147.14	140.90
37	64	1	30	190.47	182.50	223.50	194.00	180.00	178.08	195.45	200.00
38	65	1	43	209.00	204.76	203.90	221.00	240.00	233.78	190.90	200.00
39	66	2	34	150.47	131.75	135.00	126.37	160.00	138.99	145.45	168.18
40	67	2	27	200.00	190.69	204.80	116.84	180.00	173.76	172.72	177.27
41	68	2	45	171.72	189.57	244.80	234.00	225.00	211.81	168.18	227.27
42	70	2	51	203.19	208.53	190.00	196.00	220.00	231.39	218.18	227.27
43	71	2	20	188.42	167.44	200.00	183.00	175.00	185.13	159.09	150.00
44	72	2	26	190.47	187.23	209.75	175.00	159.00	156.55	145.45	186.36
45	73	2	45	178.94	179.14	170.00	162.00	190.00	192.00	177.27	181.81
46	81	1	22	173.66	148.20	160.00	159.09	168.08	151.39	163.63	145.45
47	82	2	47	173.68	165.85	170.00	193.69	182.22	163.44	190.69	172.72
48	83	2	24	178.94	161.90	161.90	163.63	150.00	155.39	177.27	168.18
49	84	2	22	201.05	185.36	190.00	196.36	191.42	215.05	186.36	188.63
50	85	1	19	115.78	107.31	130.00	121.81	123.80	113.69	136.36	109.09

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
51	87	1	40	184.21	166.35	190.00	170.90	212.38	172.60	200.00	195.44
52	88	2	29	159.47	146.34	200.00	181.81	185.71	180.58	163.63	170.47
53	90	2	65	211.05	225.36	220.00	230.90	219.04	202.85	195.00	190.90
54	95	2	50	200.00	190.00	181.93	190.00	200.00	154.50	192.73	174.54
55	99	1	40	164.50	180.00	180.60	185.00	186.66	154.55	145.45	159.09
56	100	2	31	160.95	185.00	167.74	178.40	194.66	163.63	159.09	181.81
57	101	2	57	171.42	205.00	177.74	187.79	213.33	204.50	186.36	172.72
58	103	1	65	171.00	190.00	170.32	181.87	186.66	181.81	167.91	154.54
59	105	2	24	157.14	175.00	157.63	159.62	186.66	172.71	140.90	145.45
60	106	1	26	189.50	155.00	130.00	154.22	173.33	140.90	131.12	124.99
61	107	1	48	204.80	219.51	200.00	203.43	201.81	210.90	–	–
62	108	2	38	234.10	256.58	230.00	218.88	228.00	208.63	–	–
63	109	2	18	204.90	209.26	220.00	180.29	200.00	200.00	–	–
64	110	1	26	160.00	140.53	115.00	121.03	–	–	–	–
65	114	2	36	190.00	172.68	190.00	201.71	172.72	181.81	–	–
66	116	2	20	147.56	162.10	140.00	151.93	163.63	140.90	–	–
67	117	2	18	176.47	159.34	145.00	144.20	140.90	136.36	–	–
68	119	2	19	217.64	212.68	195.00	169.95	218.18	190.91	–	–
69	120	2	45	223.90	207.87	220.00	204.29	207.27	220.90	–	–
70	122	2	65	219.80	202.92	210.00	222.31	213.63	203.20	–	–
71	123	1	40	150.20	154.20	140.00	147.63	148.75	138.18	–	–
72	125	2	36	180.00	178.02	175.00	155.69	175.45	180.00	–	–
73	126	1	27	200.00	184.39	175.00	171.67	170.00	197.27	–	–
74	127	1	57	150.00	163.81	148.18	142.85	–	–	139.63	138.64
75	128	2	47	220.00	228.90	236.36	228.57	–	–	202.70	197.73

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
76	129	1	51	220.00	231.90	210.00	214.28	—	—	182.50	202.27
77	130	2	40	290.00	312.00	318.18	314.28	—	—	306.30	295.45
78	131	1	58	230.00	266.60	245.40	257.14	—	—	225.22	209.09
79	132	2	46	275.00	280.00	281.81	314.28	—	—	319.81	280.91
80	133	2	23	200.00	230.00	204.51	228.57	—	—	220.72	181.82
81	134	2	40	215.00	225.20	236.30	237.14	—	—	238.73	229.54
82	136	2	29	172.00	200.90	160.00	171.42	—	—	182.39	186.36
83	137	1	49	215.00	226.60	224.50	208.50	—	—	—	—
84	139	1	49	200.00	221.30	192.00	200.00	—	—	—	—
85	140	2	39	190.00	202.00	173.63	228.57	—	—	162.45	190.91
86	141	2	29	146.00	148.10	172.72	171.42	—	—	146.79	131.82
87	142	2	50	210.00	216.67	180.00	185.71	—	—	189.18	177.27
88	144	1	53	175.00	200.00	186.36	228.57	—	—	208.33	209.09
89	145	1	63	160.00	166.19	185.50	180.00	—	—	157.95	159.09
90	146	1	58	220.00	223.30	224.40	200.00	—	—	225.22	213.63
91	147	1	59	205.00	237.03	218.18	228.50	—	—	229.52	202.72
92	148	2	44	172.50	200.00	195.40	214.20	—	—	185.36	190.91
93	149	1	43	230.00	217.77	227.20	222.22	—	—	211.71	190.91
94	150	2	45	240.00	264.00	245.40	262.85	—	—	243.24	254.54
95	151	1	51	182.50	202.00	177.20	200.00	—	—	209.09	209.09
96	152	2	35	200.00	220.66	192.00	185.00	—	—	180.18	172.72
97	153	2	41	174.76	163.63	165.83	156.00	—	—	—	—
98	154	2	44	202.66	180.09	192.38	181.81	—	—	185.36	174.53
99	155	2	44	207.22	228.57	238.09	236.36	—	—	200.00	188.67
100	156	1	40	248.88	214.28	236.19	222.72	—	—	246.51	234.14

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
101	157	2	30	191.00	185.00	180.99	177.27	—	—	175.61	173.53
102	159	2	63	215.00	203.00	200.00	159.77	—	—	195.12	198.11
103	160	1	53	215.00	200.00	201.90	195.45	—	—	209.76	198.11
104	161	2	43	248.88	257.14	220.63	236.36	—	—	224.39	226.41
105	162	1	65	230.00	202.11	219.04	218.18	—	—	195.12	226.41
106	164	1	48	181.81	169.72	161.90	159.09	—	—	165.85	174.53
107	165	2	36	182.72	173.33	160.95	163.63	—	—	175.61	174.53
108	166	1	37	181.81	193.54	181.81	172.72	—	—	200.00	208.00
109	167	2	29	191.10	206.45	190.90	195.45	—	—	205.74	184.00
110	168	2	22	145.45	141.93	131.81	145.45	—	—	148.57	152.00
111	169	2	60	163.63	180.64	165.45	190.63	—	—	175.00	167.00
112	170	2	45	200.00	219.35	236.36	204.50	—	—	204.47	214.23
113	171	2	52	188.57	180.64	177.27	186.36	—	—	194.28	184.00
114	172	1	33	200.00	228.00	236.36	251.25	—	—	228.57	232.00
115	173	1	43	127.27	129.03	127.27	113.63	—	—	148.57	144.00
116	174	2	34	167.86	180.64	177.27	154.54	—	—	177.14	168.00
117	175	2	30	190.90	193.54	222.72	209.09	—	—	228.57	214.37
118	177	2	33	190.85	218.00	222.73	236.36	—	—	182.85	208.00
119	179	2	37	147.45	154.00	156.82	131.81	—	—	148.50	170.00
120	180	2	18	150.00	132.55	145.45	150.00	—	—	167.14	161.00
121	181	1	48	190.90	180.64	177.27	174.46	—	—	—	—
122	182	2	43	163.63	180.64	181.81	173.61	—	—	—	—
123	183	1	48	179.38	193.54	172.72	200.00	—	—	181.42	180.94
124	184	1	37	209.00	193.54	197.26	201.86	—	—	217.14	192.00
125	185	2	28	145.73	167.74	145.45	130.21	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
126	186	1	60	209.00	219.35	175.00	177.27	–	–	217.14	192.00
127	187	2	40	150.00	150.16	177.27	150.00	–	–	161.42	169.00
128	188	2	18	180.90	167.74	181.81	171.31	–	–	194.28	192.00
129	189	2	34	190.90	193.54	190.90	190.90	–	–	205.71	200.00
130	190	1	38	179.38	193.54	163.64	145.45	–	–	177.14	160.87
131	191	2	30	177.27	180.64	172.72	150.00	–	–	194.28	170.00
132	192	2	27	168.18	141.93	150.00	145.45	–	–	–	–
133	193	2	27	150.00	154.84	151.82	138.18	–	–	148.57	147.83
134	194	2	46	163.63	180.64	159.09	136.36	–	–	188.43	178.26
135	195	2	30	163.63	167.74	150.00	181.81	–	–	–	–
136	196	2	65	204.54	206.45	195.45	190.90	–	–	–	–
137	197	2	46	200.00	180.64	168.18	200.00	–	–	199.85	217.00
138	198	2	57	150.00	154.83	131.82	131.18	–	–	137.00	147.83
139	199	2	37	197.50	180.64	195.45	168.18	–	–	205.71	191.30
140	200	1	42	150.00	154.83	168.18	145.45	–	–	170.00	160.00
141	201	2	32	181.81	167.74	209.09	168.51	–	–	175.00	200.00
142	204	2	27	227.27	206.45	220.00	220.00	–	–	230.00	240.00
143	205	1	40	204.54	167.00	181.81	172.72	–	–	180.00	165.00
144	206	2	35	172.72	180.64	181.81	172.72	–	–	178.72	169.63
145	207	2	38	200.00	180.64	163.63	163.63	–	–	161.70	160.09
146	209	1	40	215.68	227.27	213.33	229.88	–	–	207.65	220.00
147	210	2	32	227.91	240.90	222.00	246.92	–	–	217.02	244.85
148	211	2	49	214.41	227.27	231.00	242.32	–	–	229.72	245.00
149	212	1	56	237.15	213.63	213.33	220.68	–	–	211.06	225.00
150	213	2	39	178.46	165.45	152.80	160.90	–	–	165.95	175.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
151	214	1	45	179.18	190.90	177.14	165.51	–	–	181.27	185.00
152	215	2	36	146.28	150.00	168.88	165.51	–	–	156.00	180.00
153	217	2	50	311.73	263.63	288.88	275.86	–	–	276.59	330.00
154	218	1	50	255.22	239.13	226.66	243.67	–	–	245.00	265.00
155	220	1	57	198.19	209.09	208.88	197.70	–	–	200.00	222.94
156	221	2	33	208.00	200.00	186.66	183.90	–	–	195.74	230.00
157	222	1	30	204.11	169.56	198.33	227.14	–	–	210.21	225.00
158	223	1	52	215.85	236.36	199.77	220.68	–	–	189.78	215.00
159	224	2	39	218.76	190.90	177.77	183.90	–	–	190.63	195.00
160	225	1	53	210.63	190.90	222.22	183.90	–	–	211.48	188.00
161	226	1	22	208.10	190.90	195.55	174.71	–	–	194.89	210.00
162	227	1	24	181.80	186.95	184.44	185.51	–	–	183.82	190.00
163	228	2	48	310.00	294.55	266.64	275.86	–	–	290.21	275.00
164	229	1	40	166.77	172.72	159.99	183.90	–	–	169.78	180.00
165	230	2	32	209.68	204.54	195.23	222.88	–	–	200.00	220.00
166	231	2	44	187.00	190.90	231.10	179.31	–	–	195.74	190.00
167	232	2	28	226.12	222.72	222.22	197.70	–	–	–	–
168	233	2	58	239.13	240.90	257.77	202.29	–	–	–	–
169	235	1	43	269.56	272.70	275.55	257.47	–	–	258.29	260.00
170	238	1	43	198.09	190.90	177.77	170.11	–	–	197.00	180.00
171	239	1	38	200.02	227.27	204.44	221.44	–	–	197.44	235.00
172	241	2	59	281.03	281.80	272.69	278.88	–	–	265.53	264.50
173	242	1	36	217.41	236.36	239.99	211.49	–	–	220.21	205.00
174	243	2	23	216.21	191.48	251.68	239.08	–	–	226.88	249.41
175	247	1	47	217.86	190.90	–	–	–	–	–	–

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
176	248	2	43	155.72	131.80	134.83	125.70	—	—	136.17	145.00
177	251	1	18	167.42	159.09	168.88	183.90	—	—	188.08	200.00
178	252	1	45	193.66	208.69	222.22	216.09	—	—	180.42	214.11
179	253	2	32	203.62	195.45	195.55	219.09	—	—	213.61	220.00
180	255	1	40	150.06	162.16	151.11	146.34	—	—	148.83	158.75
181	256	2	34	216.00	204.54	200.00	195.12	—	—	223.25	211.42
182	257	2	26	164.14	182.00	160.00	185.36	—	—	190.69	188.57
183	258	2	23	159.45	202.24	160.00	175.61	—	—	158.13	181.25
184	259	2	24	144.87	135.13	142.22	156.09	—	—	—	—
185	260	2	23	209.77	225.00	204.00	224.39	—	—	190.69	217.14
186	263	2	42	190.70	168.18	185.36	174.53	—	—	—	—
187	264	1	50	—	—	230.00	204.63	—	—	—	—
188	265	2	49	—	—	237.22	246.51	—	—	—	—
189	266	2	36	—	—	244.15	241.86	—	—	—	—
190	267	1	62	—	—	162.72	153.49	—	—	—	—
191	268	2	59	—	—	181.37	176.74	—	—	—	—
192	269	2	32	—	—	162.87	172.09	—	—	—	—
193	271	2	23	—	—	220.88	200.00	—	—	—	—
194	272	2	55	—	—	188.42	200.00	—	—	—	—
195	273	2	27	—	—	155.74	172.09	—	—	—	—
196	274	1	53	—	—	190.79	172.09	—	—	—	—
197	275	2	48	—	—	234.84	209.30	—	—	—	—
198	276	1	19	—	—	146.53	130.23	—	—	—	—
199	277	2	28	—	—	153.65	169.76	—	—	—	—
200	278	2	27	—	—	169.80	153.49	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
201	279	2	65	—	—	200.00	213.95	—	—	—	—
202	280	2	22	—	—	204.38	223.25	—	—	—	—
203	281	2	18	—	—	155.95	162.79	—	—	—	—
204	282	2	42	—	—	211.68	200.00	—	—	—	—
205	283	2	55	—	—	228.09	200.00	—	—	—	—
206	284	2	22	—	—	155.70	176.74	—	—	—	—
207	285	2	19	—	—	144.15	130.23	—	—	—	—
208	286	1	25	—	—	195.45	200.00	—	—	—	—
209	287	2	32	—	—	204.54	237.21	—	—	—	—
210	288	2	27	—	—	183.76	172.09	—	—	—	—
211	289	2	25	—	—	197.61	230.22	—	—	—	—
212	290	2	21	—	—	180.19	200.00	—	—	—	—
213	291	1	50	—	—	155.95	167.44	—	—	—	—
214	292	2	42	—	—	283.76	279.07	—	—	—	—
215	293	1	66	—	—	122.07	111.63	—	—	—	—
216	294	2	33	156.52	163.63	—	—	—	—	—	—
217	298	2	20	141.30	145.45	—	—	—	—	—	—
218	299	2	18	152.17	150.00	—	—	—	—	—	—
219	300	2	45	165.88	153.63	—	—	—	—	—	—
220	301	1	49	200.00	213.65	—	—	—	—	—	—
221	303	2	45	219.56	190.90	—	—	—	—	—	—
222	304	2	30	171.73	163.63	—	—	—	—	—	—
223	305	2	59	193.47	209.09	—	—	—	—	—	—
224	306	2	48	156.52	172.72	—	—	—	—	—	—
225	307	2	19	136.78	140.90	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
226	308	2	18	132.60	127.27	—	—	—	—	—	—
227	309	2	40	158.69	159.15	—	—	—	—	—	—
228	310	2	50	165.21	165.09	—	—	—	—	—	—
229	311	1	23	139.13	140.00	—	—	—	—	—	—
230	312	2	25	167.38	167.00	—	—	—	—	—	—
231	313	1	26	165.21	159.09	—	—	—	—	—	—
232	314	2	42	169.56	180.00	—	—	—	—	—	—
233	315	2	35	156.52	140.90	—	—	—	—	—	—
234	316	2	18	115.21	109.09	—	—	—	—	—	—
235	317	2	20	128.25	145.45	—	—	—	—	—	—
236	318	1	33	—	—	153.49	159.09	—	—	173.91	169.57
237	319	1	65	—	—	200.78	204.54	—	—	182.60	191.30
238	320	2	64	—	—	246.72	232.55	—	—	232.00	208.69
239	321	2	30	—	—	161.56	154.51	—	—	—	—
240	323	2	47	—	—	226.99	227.27	—	—	—	—
241	324	2	52	—	—	163.58	167.44	—	—	178.26	173.91
242	325	2	39	—	—	152.82	163.63	—	—	173.91	165.91
243	326	2	42	—	—	141.95	148.83	—	—	147.83	152.17
244	327	2	21	—	—	176.92	167.44	—	—	156.50	165.22
245	329	1	57	—	—	170.30	190.90	—	—	191.30	182.61
246	330	2	50	—	—	150.59	159.09	—	—	168.00	147.83
247	332	2	28	—	—	159.44	163.63	—	—	169.57	182.61
248	333	1	65	—	—	209.52	204.54	—	—	186.96	195.65
249	334	2	56	—	—	170.30	172.72	—	—	173.91	165.22
250	336	1	36	—	—	135.56	140.90	—	—	139.13	147.83

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
251	337	2	33	—	—	159.44	150.00	—	—	143.47	156.52
252	338	1	54	—	—	196.52	195.45	—	—	169.56	182.60
253	339	2	48	—	—	183.53	218.18	—	—	208.70	204.35
254	340	2	55	—	—	159.43	140.90	—	—	152.17	160.87
255	341	1	34	—	—	146.33	140.90	—	—	147.83	156.52
256	342	1	42	—	—	192.16	200.00	—	—	191.30	208.69
257	343	2	34	—	—	196.52	181.81	—	—	186.00	208.69
258	344	2	31	—	—	150.00	140.90	—	—	—	—

APPENDIX B – Triglycerides (mg/100ml serum)

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1	1	44	159.99	168.70	226.66	160.00	163.00	164.28	185.00	166.60
2	2	2	33	64.50	74.66	66.66	66.00	72.34	88.57	78.56	88.88
3	3	1	50	85.36	119.99	93.33	133.00	106.39	101.42	125.00	135.00
4	4	2	40	85.62	87.99	63.99	83.00	85.10	70.00	81.25	102.00
5	5	2	18	83.99	73.33	50.66	88.88	56.73	57.14	87.50	66.11
6	6	1	44	79.15	87.35	89.99	100.00	92.19	71.42	100.00	88.88
7	7	2	37	82.17	90.62	87.99	88.88	73.75	64.28	87.50	111.11
8	8	2	40	99.99	103.99	82.66	127.00	104.30	88.50	137.80	122.22
9	10	2	18	46.66	59.99	42.16	52.55	92.19	50.00	71.44	55.55
10	11	2	50	73.33	93.00	106.66	80.00	96.93	80.00	106.75	126.66
11	13	1	21	113.33	69.33	116.66	74.83	137.93	78.57	102.70	113.00
12	14	2	24	79.99	50.00	79.98	104.51	96.55	57.14	54.05	60.00
13	15	2	28	86.66	95.99	122.66	146.66	110.34	135.71	152.70	106.66
14	16	2	39	42.66	39.99	66.66	38.70	82.75	57.14	51.35	66.66
15	17	1	18	69.33	66.66	133.30	83.87	103.44	64.28	56.75	73.33
16	18	2	39	70.66	42.66	73.33	76.12	82.75	96.42	104.05	86.66
17	20	1	26	55.99	72.30	53.00	57.14	55.50	112.50	104.00	96.55
18	21	1	20	47.99	46.15	60.00	70.71	66.60	50.00	40.00	54.79
19	24	1	52	137.00	148.38	176.00	143.00	160.00	176.47	125.00	165.51
20	25	1	38	53.33	75.20	112.50	84.84	68.96	80.00	65.45	64.52
21	26	2	29	46.66	47.00	62.50	36.36	41.85	40.00	36.36	45.16
22	27	1	30	85.71	80.00	70.00	98.57	80.00	104.57	68.97	126.66
23	28	1	23	78.57	66.66	100.00	64.28	120.00	85.64	137.93	86.66
24	31	2	25	60.00	82.66	57.14	57.00	58.00	84.96	68.96	60.00
25	32	1	22	67.28	86.66	61.42	58.50	80.00	78.43	96.55	60.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
26	33	1	19	57.00	86.66	107.00	82.85	53.33	65.35	124.14	66.66
27	34	1	34	75.71	80.00	60.00	58.57	80.00	65.35	137.93	133.33
28	37	1	29	100.00	108.00	142.00	82.85	120.00	84.96	137.93	120.00
29	38	1	42	107.14	112.00	100.00	109.93	96.55	120.00	93.33	116.00
30	41	1	21	64.28	86.66	88.57	57.14	53.33	91.50	68.96	86.66
31	42	1	25	85.71	60.00	85.71	50.00	53.33	52.28	96.55	73.33
32	51	2	37	80.00	95.00	71.42	95.00	53.33	136.78	82.75	73.33
33	56	2	56	232.66	206.66	271.40	250.30	256.25	214.95	213.33	200.00
34	57	1	62	119.99	113.33	100.00	104.21	100.00	134.96	120.00	158.33
35	58	1	33	90.66	114.00	92.80	100.22	87.50	122.63	93.33	100.00
36	61	1	40	66.66	80.00	64.28	67.03	100.00	126.19	64.48	83.33
37	64	1	30	63.99	46.66	42.80	53.98	75.00	67.84	60.00	75.00
38	65	1	43	186.66	153.33	128.57	136.19	200.00	157.14	206.66	208.33
39	66	2	34	55.99	66.66	50.00	65.29	75.00	83.33	53.33	66.66
40	67	2	27	82.66	60.00	64.28	89.57	100.25	65.47	53.33	83.33
41	68	2	45	73.66	40.00	64.28	74.84	81.25	52.38	53.33	75.00
42	70	2	51	119.99	93.33	100.00	94.47	106.25	120.23	120.00	116.66
43	71	2	20	63.99	42.85	50.00	50.00	56.26	54.76	50.00	66.66
44	72	2	26	59.99	53.33	35.71	49.05	64.38	47.62	41.35	50.00
45	73	2	45	116.66	106.66	100.00	100.00	81.25	103.47	92.85	66.66
46	81	1	22	94.11	92.85	73.33	104.00	64.51	105.95	128.50	85.71
47	82	2	47	81.50	57.14	73.33	126.00	154.83	183.33	91.42	92.85
48	83	2	24	104.88	64.28	70.66	45.33	67.58	75.00	71.42	92.85
49	84	2	22	68.23	42.84	80.00	56.00	106.89	95.23	52.94	57.14
50	85	1	19	58.82	57.14	40.00	40.00	55.17	38.09	57.14	57.14

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
51	87	1	40	131.76	107.18	133.33	145.33	137.93	120.23	128.50	142.85
52	88	2	29	64.70	57.14	37.50	25.33	77.23	60.71	42.80	57.14
53	90	2	65	82.35	71.43	56.32	50.66	60.96	83.33	71.42	78.57
54	95	2	50	31.42	64.00	53.33	65.35	82.75	66.66	60.00	58.33
55	99	1	40	87.14	100.00	60.00	71.89	117.24	66.66	66.66	66.66
56	100	2	31	30.00	64.00	40.00	45.75	68.96	46.66	53.33	66.66
57	101	2	57	87.14	72.00	53.33	98.03	110.34	80.00	93.33	83.33
58	103	1	65	78.57	80.00	53.33	88.60	124.13	80.00	66.66	66.66
59	105	2	24	62.22	72.00	50.00	47.56	68.96	57.14	53.33	68.97
60	106	1	26	100.00	112.00	53.33	78.43	137.99	69.33	86.66	53.57
61	107	1	48	214.28	110.80	168.75	155.95	93.33	158.33	—	—
62	108	2	38	114.28	114.00	125.00	129.76	100.00	100.00	—	—
63	109	2	18	271.40	186.00	268.75	192.85	226.66	216.66	—	—
64	110	1	26	71.42	92.04	63.75	84.52	—	—	—	—
65	114	2	36	128.57	121.47	81.25	96.42	164.28	116.66	—	—
66	116	2	20	42.80	50.31	50.00	65.47	71.42	75.00	—	—
67	117	2	18	100.00	111.65	75.00	100.00	92.85	100.00	—	—
68	119	2	19	120.00	90.38	118.75	132.14	107.14	91.66	—	—
69	120	2	45	228.57	244.17	315.50	229.76	250.00	333.33	—	—
70	122	2	65	100.00	81.76	100.00	90.49	85.71	80.56	—	—
71	123	1	40	50.00	54.08	62.50	85.71	71.42	66.66	—	—
72	125	2	36	71.42	66.66	68.25	82.14	78.57	83.33	—	—
73	126	1	27	85.71	88.06	81.50	95.23	114.28	125.00	—	—
74	127	1	57	71.43	46.82	129.01	100.00	—	—	100.00	96.55
75	128	2	47	200.00	198.00	100.64	137.50	—	—	200.00	179.31

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
76	129	1	51	129.54	131.10	125.49	175.00	—	—	221.42	158.62
77	130	2	40	128.56	145.00	130.71	125.00	—	—	178.57	172.41
78	131	1	58	114.28	166.00	137.25	150.00	—	—	142.85	158.62
79	132	2	46	100.45	137.79	156.86	137.50	—	—	142.85	110.34
80	133	2	23	71.43	96.32	156.86	87.50	—	—	78.57	96.55
81	134	2	40	71.43	69.56	48.00	75.00	—	—	50.00	75.86
82	136	2	29	74.28	60.26	78.46	100.00	—	—	89.28	103.45
83	137	1	49	228.56	271.90	294.11	250.00	—	—	—	—
84	139	1	49	142.90	123.07	137.25	125.00	—	—	—	—
85	140	2	39	100.00	66.06	91.50	75.00	—	—	64.28	68.96
86	141	2	29	71.43	46.82	52.28	75.00	—	—	53.57	41.38
87	142	2	50	100.00	55.50	78.41	75.00	—	—	53.57	89.65
88	144	1	53	78.56	69.15	183.00	100.00	—	—	118.60	124.14
89	145	1	63	92.85	77.70	67.97	100.00	—	—	78.57	124.14
90	146	1	58	114.28	155.50	169.93	156.25	—	—	142.85	172.41
91	147	1	59	180.00	222.00	169.93	150.00	—	—	228.35	262.07
92	148	2	44	71.43	65.55	78.43	100.00	—	—	145.10	96.55
93	149	1	43	200.00	166.00	183.00	150.00	—	—	167.85	172.41
94	150	2	45	100.00	128.40	117.63	137.50	—	—	110.70	117.24
95	151	1	51	78.56	78.00	78.43	112.50	—	—	96.42	110.34
96	152	2	35	142.90	66.60	104.57	120.00	—	—	82.14	110.34
97	153	2	41	84.37	100.00	95.24	93.60	—	—	—	—
98	154	2	44	141.93	179.10	175.00	107.14	—	—	103.23	95.24
99	155	2	44	238.70	214.42	237.50	192.85	—	—	309.67	217.68
100	156	1	40	268.21	247.16	250.00	242.00	—	—	258.06	217.68

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
101	157	2	30	103.22	84.77	100.00	92.85	–	–	90.32	108.84
102	159	2	63	96.44	99.10	93.75	95.00	–	–	109.60	88.44
103	160	1	53	70.96	96.71	87.50	78.57	–	–	90.32	135.30
104	161	2	43	83.87	115.82	112.50	114.28	–	–	103.22	156.46
105	162	1	65	309.60	296.12	312.50	300.00	–	–	200.00	340.14
106	164	1	48	272.90	230.44	300.00	285.71	–	–	264.52	394.55
107	165	2	36	103.22	125.37	125.00	100.00	–	–	116.12	136.05
108	166	1	37	66.66	50.00	85.71	111.11	–	–	106.66	136.00
109	167	2	29	60.60	50.00	64.28	51.85	–	–	35.55	60.00
110	168	2	22	84.84	66.66	85.71	81.48	–	–	106.66	72.00
111	169	2	60	90.90	83.33	71.42	88.88	–	–	62.22	64.00
112	170	2	45	72.72	50.00	85.71	59.25	–	–	40.00	48.00
113	171	2	52	90.90	56.66	125.00	59.25	–	–	64.00	80.00
114	172	1	33	96.96	102.30	100.00	109.01	–	–	136.00	120.00
115	173	1	43	60.60	66.66	71.42	74.07	–	–	68.00	60.00
116	174	2	34	55.17	50.00	50.00	74.07	–	–	68.00	60.00
117	175	2	30	68.96	50.00	57.15	66.66	–	–	55.20	56.15
118	177	2	33	96.96	74.50	64.28	55.17	–	–	92.00	48.00
119	179	2	37	78.78	66.66	71.42	59.25	–	–	48.00	60.00
120	180	2	18	72.72	68.49	85.71	88.88	–	–	92.00	120.00
121	181	1	48	72.72	50.00	78.57	98.64	–	–	–	–
122	182	2	43	169.98	100.00	107.14	158.11	–	–	–	–
123	183	1	48	110.13	50.00	100.00	103.70	–	–	88.00	87.00
124	184	1	37	84.13	66.66	85.71	51.85	–	–	60.00	88.00
125	185	2	28	64.78	50.00	85.71	66.66	–	–	–	–

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
126	186	1	60	182.06	100.00	100.00	133.33	–	–	105.85	112.00
127	187	2	40	82.75	83.33	107.14	74.07	–	–	72.00	72.00
128	188	2	18	99.31	83.33	107.14	74.07	–	–	116.00	114.81
129	189	2	34	152.43	130.00	114.28	159.66	–	–	124.00	140.74
130	190	1	38	96.55	83.33	128.57	133.33	–	–	164.00	170.37
131	191	2	30	103.44	66.66	78.57	88.88	–	–	88.00	88.89
132	192	2	27	89.65	50.00	71.42	56.34	–	–	–	–
133	193	2	27	72.72	33.33	71.42	70.13	–	–	88.00	51.85
134	194	2	46	108.20	133.33	100.00	103.70	–	–	136.00	148.15
135	195	2	30	163.63	141.66	92.86	81.48	–	–	–	–
136	196	2	65	106.68	100.00	85.71	135.70	–	–	–	–
137	197	2	46	165.17	100.00	152.85	160.05	–	–	160.00	166.67
138	198	2	57	106.68	66.66	71.42	88.88	–	–	68.00	111.11
139	199	2	37	215.15	166.66	185.71	222.20	–	–	228.00	259.26
140	200	1	42	78.78	66.66	71.42	59.25	–	–	56.00	66.67
141	201	2	32	64.78	33.33	71.42	37.03	–	–	36.00	81.48
142	204	2	27	315.15	206.45	175.00	222.22	–	–	212.00	192.59
143	205	1	40	212.12	200.64	242.85	162.96	–	–	276.00	281.48
144	206	2	35	133.33	180.64	107.14	133.33	–	–	88.00	92.65
145	207	2	38	96.96	66.64	92.85	59.25	–	–	68.00	59.00
146	209	1	40	212.85	307.14	264.28	237.28	–	–	256.75	200.00
147	210	2	32	125.66	128.57	99.99	84.74	–	–	95.94	100.00
148	211	2	49	81.66	85.00	71.43	93.22	–	–	79.72	86.66
149	212	1	56	460.01	449.90	328.57	398.30	–	–	301.35	353.33
150	213	2	39	62.02	85.70	78.57	84.74	–	–	43.53	66.66

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
151	214	1	45	120.00	114.28	125.00	170.00	–	–	103.66	146.66
152	215	2	36	42.91	57.14	57.14	42.37	–	–	36.48	53.33
153	217	2	50	97.75	157.14	114.28	93.22	–	–	132.43	187.50
154	218	1	50	282.41	200.00	285.71	211.86	–	–	331.32	218.75
155	220	1	57	135.48	142.85	178.57	203.38	–	–	145.95	146.66
156	221	2	33	106.00	100.00	100.00	84.74	–	–	74.32	86.66
157	222	1	30	204.30	100.00	78.57	186.40	–	–	118.92	200.00
158	223	1	52	102.39	85.71	78.57	67.80	–	–	145.35	86.66
159	224	2	39	82.41	71.42	71.43	76.27	–	–	86.48	73.33
160	225	1	53	106.89	164.28	85.71	101.69	–	–	124.32	128.15
161	226	1	22	95.45	100.00	78.57	84.74	–	–	108.11	106.66
162	227	1	24	60.60	64.28	71.43	67.80	–	–	85.13	93.33
163	228	2	48	221.33	160.00	235.71	228.81	–	–	256.75	175.00
164	229	1	40	181.87	185.71	121.42	152.54	–	–	186.48	180.00
165	230	2	32	107.23	200.00	150.00	228.81	–	–	172.97	173.33
166	231	2	44	73.33	71.42	92.85	154.84	–	–	143.24	100.00
167	232	2	28	148.38	71.42	100.00	101.69	–	–	–	–
168	233	2	58	114.21	109.33	85.71	127.11	–	–	–	–
169	235	1	43	113.33	128.57	128.57	144.06	–	–	118.92	106.66
170	238	1	43	160.66	171.42	142.85	175.54	–	–	147.29	153.33
171	239	1	38	188.89	160.00	128.57	203.38	–	–	229.72	253.75
172	241	2	59	127.27	142.85	135.71	186.44	–	–	166.21	165.00
173	242	1	36	171.40	142.85	171.42	152.54	–	–	170.27	173.33
174	243	2	23	155.67	157.13	171.42	186.44	–	–	121.55	119.99
175	247	1	47	109.57	121.42	–	–	–	–	–	–

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
176	248	2	43	115.83	100.00	100.00	127.11	—	—	94.59	93.33
177	251	1	18	72.91	85.71	64.28	84.74	—	—	78.37	106.66
178	252	1	45	182.85	214.28	342.85	254.23	—	—	245.95	387.50
179	253	2	32	73.86	85.71	78.57	101.69	—	—	71.62	66.66
180	255	1	40	80.95	124.00	119.21	90.32	—	—	68.75	78.68
181	256	2	34	96.42	71.42	85.71	77.41	—	—	56.25	59.01
182	257	2	26	66.66	50.00	57.14	77.41	—	—	56.25	52.45
183	258	2	23	56.54	64.28	80.54	90.32	—	—	87.50	80.07
184	259	2	24	60.11	67.85	57.14	58.06	—	—	—	—
185	260	2	23	110.00	68.92	66.62	76.12	—	—	87.50	72.13
186	263	2	42	112.50	85.71	116.12	68.02	—	—	—	—
187	264	1	50	—	—	230.64	135.51	—	—	—	—
188	265	2	49	—	—	145.45	137.93	—	—	—	—
189	266	2	36	—	—	295.45	296.29	—	—	—	—
190	267	1	62	—	—	58.18	55.17	—	—	—	—
191	268	2	59	—	—	93.69	82.76	—	—	—	—
192	269	2	32	—	—	52.20	34.48	—	—	—	—
193	271	2	23	—	—	102.66	103.45	—	—	—	—
194	272	2	55	—	—	58.18	55.17	—	—	—	—
195	273	2	27	—	—	43.18	55.17	—	—	—	—
196	274	1	53	—	—	58.18	82.76	—	—	—	—
197	275	2	48	—	—	83.63	110.35	—	—	—	—
198	276	1	19	—	—	46.81	48.28	—	—	—	—
199	277	2	28	—	—	59.41	68.97	—	—	—	—
200	278	2	27	—	—	155.00	131.03	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
201	279	2	65	—	—	129.73	124.14	—	—	—	—
202	280	2	22	—	—	48.30	46.66	—	—	—	—
203	281	2	18	—	—	109.09	117.24	—	—	—	—
204	282	2	42	—	—	101.81	124.14	—	—	—	—
205	283	2	55	—	—	203.63	93.33	—	—	—	—
206	284	2	22	—	—	90.90	110.34	—	—	—	—
207	285	2	19	—	—	52.27	34.48	—	—	—	—
208	286	1	25	—	—	120.00	117.24	—	—	—	—
209	287	2	32	—	—	28.83	41.38	—	—	—	—
210	288	2	27	—	—	109.09	75.86	—	—	—	—
211	289	2	25	—	—	147.76	110.34	—	—	—	—
212	290	2	21	—	—	48.63	48.28	—	—	—	—
213	291	1	50	—	—	50.90	55.17	—	—	—	—
214	292	2	42	—	—	94.54	89.65	—	—	—	—
215	293	1	66	—	—	50.38	55.17	—	—	—	—
216	294	2	33	77.34	46.66	—	—	—	—	—	—
217	298	2	20	63.89	40.00	—	—	—	—	—	—
218	299	2	18	84.12	66.66	—	—	—	—	—	—
219	300	2	45	80.73	53.33	—	—	—	—	—	—
220	301	1	49	74.00	113.33	—	—	—	—	—	—
221	303	2	45	73.95	53.33	—	—	—	—	—	—
222	304	2	30	37.00	53.33	—	—	—	—	—	—
223	305	2	59	104.22	80.00	—	—	—	—	—	—
224	306	2	48	57.17	40.00	—	—	—	—	—	—
225	307	2	19	57.11	46.66	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
226	308	2	18	84.00	80.00	—	—	—	—	—	—
227	309	2	40	87.39	53.33	—	—	—	—	—	—
228	310	2	50	84.00	70.06	—	—	—	—	—	—
229	311	1	23	70.56	68.54	—	—	—	—	—	—
230	312	2	25	94.06	80.76	—	—	—	—	—	—
231	313	1	26	40.33	40.00	—	—	—	—	—	—
232	314	2	42	40.33	46.66	—	—	—	—	—	—
233	315	2	35	73.95	40.00	—	—	—	—	—	—
234	316	2	18	80.67	66.66	—	—	—	—	—	—
235	317	2	20	70.56	53.33	—	—	—	—	—	—
236	318	1	33	—	—	55.17	76.92	—	—	53.33	60.38
237	319	1	65	—	—	141.37	128.20	—	—	160.00	173.58
238	320	2	64	—	—	165.51	250.08	—	—	275.00	181.13
239	321	2	30	—	—	68.96	71.51	—	—	—	—
240	323	2	47	—	—	151.72	160.25	—	—	—	—
241	324	2	52	—	—	162.06	112.50	—	—	160.00	181.13
242	325	2	39	—	—	127.58	115.38	—	—	111.11	135.85
243	326	2	42	—	—	41.37	50.00	—	—	62.22	52.83
244	327	2	21	—	—	41.37	79.17	—	—	53.33	75.47
245	329	1	57	—	—	68.96	76.92	—	—	80.00	83.02
246	330	2	50	—	—	55.17	64.10	—	—	88.88	113.21
247	332	2	28	—	—	79.30	70.51	—	—	53.33	75.47
248	333	1	65	—	—	117.24	108.97	—	—	142.22	128.30
249	334	2	56	—	—	82.75	64.10	—	—	97.77	109.43
250	336	1	36	—	—	72.41	76.92	—	—	83.25	80.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
251	337	2	33	–	–	55.17	76.92	–	–	97.77	75.47
252	338	1	54	–	–	136.94	102.56	–	–	115.55	135.85
253	339	2	48	–	–	96.55	128.20	–	–	133.33	128.30
254	340	2	55	–	–	62.05	57.69	–	–	75.55	98.11
255	341	1	34	–	–	96.55	83.33	–	–	111.11	90.57
256	342	1	42	–	–	313.79	230.76	–	–	275.55	294.34
257	343	2	34	–	–	51.72	76.92	–	–	62.22	90.57
258	344	2	31	–	–	55.17	51.28	–	–	–	–

APPENDIX C – HDL Cholesterol (mg/100ml serum)

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1	1	44	45.50	53.80	56.84	56.00	45.23	37.64	40.68	51.28
2	2	2	33	45.00	40.34	39.22	42.00	35.70	31.05	36.36	41.02
3	3	1	50	48.00	50.69	53.15	44.00	38.00	38.00	32.95	38.46
4	4	2	40	55.00	49.00	60.90	54.00	53.57	46.82	43.18	56.41
5	5	2	18	35.50	46.00	36.15	40.90	35.71	35.00	40.90	51.58
6	6	1	44	40.00	39.00	37.89	46.00	44.04	42.35	36.36	53.84
7	7	2	37	53.80	56.00	54.13	48.00	65.47	44.70	47.72	61.54
8	8	2	40	71.90	70.43	68.68	58.00	65.47	56.47	52.27	58.92
9	10	2	18	42.00	40.60	38.42	44.00	42.50	41.17	39.77	53.85
10	11	2	50	34.00	33.33	31.00	43.92	48.00	40.20	45.42	47.47
11	13	1	21	48.00	51.04	45.00	52.28	44.00	32.98	43.27	48.48
12	14	2	24	63.00	58.33	64.00	67.35	59.00	41.95	51.46	59.59
13	15	2	28	39.45	40.62	44.00	48.40	43.00	37.11	41.13	45.45
14	16	2	39	51.00	54.58	56.00	59.36	53.00	44.32	43.07	52.52
15	17	1	18	42.20	39.58	44.00	41.09	39.00	36.08	29.04	38.38
16	18	2	39	38.00	44.79	31.00	48.99	43.00	43.29	55.07	42.42
17	20	1	26	42.88	43.00	35.29	34.42	38.88	27.08	38.09	43.00
18	21	1	20	50.00	46.00	48.80	55.11	55.50	54.16	40.00	56.00
19	24	1	52	53.74	54.56	46.00	48.00	50.00	47.50	52.99	54.16
20	25	1	38	42.04	40.00	43.13	44.36	45.00	34.00	46.73	34.16
21	26	2	29	63.63	55.50	50.90	60.81	54.00	50.00	55.43	55.90
22	27	1	30	45.83	53.00	47.72	52.15	56.66	52.80	49.18	44.00
23	28	1	23	37.49	46.00	40.90	38.54	40.00	42.69	36.06	39.80
24	31	2	25	41.66	44.10	40.90	47.61	39.77	41.57	49.18	52.00
25	32	1	22	39.99	48.83	47.72	48.07	43.33	49.43	45.90	42.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
26	33	1	19	41.66	41.80	35.22	41.04	39.77	49.43	36.06	46.40
27	34	1	34	56.66	55.00	52.27	58.95	60.00	69.66	62.29	54.00
28	37	1	29	37.49	39.53	29.54	39.68	30.00	41.57	29.50	40.40
29	38	1	42	38.32	34.52	40.00	44.94	32.78	39.00	31.00	35.41
30	41	1	21	34.99	32.50	31.81	43.08	40.00	38.20	39.34	37.00
31	42	1	25	39.99	45.30	40.90	47.39	48.86	53.93	42.62	46.00
32	51	2	37	54.65	47.91	43.18	45.57	38.63	42.69	45.90	56.00
33	56	2	56	43.26	37.23	42.85	46.30	38.23	44.33	38.00	39.58
34	57	1	62	45.86	40.42	40.47	43.67	47.05	43.96	41.00	48.70
35	58	1	33	39.13	35.95	50.32	35.79	45.09	41.50	44.00	41.66
36	61	1	40	49.99	40.42	69.00	57.99	45.09	45.28	47.00	36.26
37	64	1	30	40.80	40.42	64.20	49.40	34.25	37.54	39.00	45.83
38	65	1	43	46.72	47.02	50.00	50.85	47.05	49.43	48.00	44.79
39	66	2	34	55.43	42.55	59.50	68.25	52.94	46.98	52.00	52.08
40	67	2	27	45.65	42.55	51.90	60.14	41.18	49.24	46.00	43.75
41	68	2	45	39.13	50.85	47.60	59.18	41.34	46.22	41.00	45.83
42	70	2	51	35.86	43.61	45.20	57.51	41.18	39.62	48.00	45.83
43	71	2	20	46.73	43.18	50.00	59.00	44.12	43.00	44.00	45.00
44	72	2	26	63.04	51.70	40.47	69.00	44.12	46.98	44.00	64.25
45	73	2	45	32.17	44.89	50.00	45.58	37.25	35.47	43.00	40.62
46	81	1	22	50.54	50.27	45.65	49.20	54.16	41.69	55.88	46.00
47	82	2	47	54.94	54.27	45.65	51.46	35.41	35.66	55.88	50.00
48	83	2	24	52.52	48.37	50.00	67.40	39.58	39.43	61.76	50.00
49	84	2	22	48.35	40.54	45.65	50.33	33.23	39.43	52.94	46.00
50	85	1	19	49.45	45.94	51.08	52.13	47.91	45.84	58.82	47.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
51	87	1	40	35.16	39.34	36.95	40.00	31.25	34.53	44.11	35.50
52	88	2	29	41.53	43.51	31.81	48.31	31.25	34.72	50.00	40.00
53	90	2	65	63.51	47.29	56.32	64.71	45.23	50.18	67.64	60.00
54	95	2	50	70.74	56.90	66.66	70.58	65.00	57.00	49.59	50.00
55	99	1	40	40.81	50.52	40.00	47.19	32.78	44.00	34.00	42.48
56	100	2	31	56.63	47.61	56.66	61.79	55.70	53.00	42.40	50.00
57	101	2	57	51.02	54.76	40.00	40.00	59.55	50.00	42.00	43.75
58	103	1	65	50.11	51.19	47.72	48.32	68.85	56.00	43.00	60.59
59	105	2	24	61.22	52.60	52.27	66.29	68.85	55.76	50.55	51.04
60	106	1	26	61.45	55.47	66.66	72.54	72.13	70.00	47.00	52.08
61	107	1	48	35.00	39.37	34.61	29.24	40.00	35.39	—	—
62	108	2	38	32.50	43.67	34.61	32.45	33.00	28.48	—	—
63	109	2	18	32.50	38.66	31.37	28.39	26.00	25.00	—	—
64	110	1	26	45.00	44.86	39.21	41.13	—	—	—	—
65	114	2	36	50.00	55.60	45.09	50.94	40.00	41.66	—	—
66	116	2	20	37.50	50.90	44.23	39.81	46.00	38.54	—	—
67	117	2	18	35.00	40.57	44.23	32.60	35.00	29.16	—	—
68	119	2	19	45.00	58.99	47.05	41.88	42.00	48.95	—	—
69	120	2	45	38.75	38.90	39.21	38.67	26.00	29.16	—	—
70	122	2	65	57.50	68.01	50.98	73.20	62.00	60.00	—	—
71	123	1	40	47.50	48.92	49.01	43.58	50.00	40.41	—	—
72	125	2	36	58.75	58.23	47.05	52.64	48.00	45.83	—	—
73	126	1	27	47.50	43.19	37.25	44.71	40.00	33.68	—	—
74	127	1	57	34.09	29.40	29.00	37.14	—	—	29.89	29.59
75	128	2	47	27.95	43.32	38.40	51.42	—	—	40.50	40.82

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
76	129	1	51	38.63	38.87	44.00	48.57	—	—	36.08	36.73
77	130	2	40	37.49	31.72	32.00	45.71	—	—	32.00	34.69
78	131	1	58	45.45	45.26	52.00	57.14	—	—	45.36	35.71
79	132	2	46	45.45	38.59	46.00	45.71	—	—	45.36	36.73
80	133	2	23	43.18	46.80	46.00	48.57	—	—	50.00	43.87
81	134	2	40	49.99	41.39	46.00	60.00	—	—	53.60	42.86
82	136	2	29	54.54	45.84	52.00	60.00	—	—	60.60	50.00
83	137	1	49	40.90	32.88	42.00	48.57	—	—	—	—
84	139	1	49	29.54	24.75	24.40	31.42	—	—	—	—
85	140	2	39	56.81	40.61	56.00	60.00	—	—	56.56	48.98
86	141	2	29	29.54	45.06	64.00	54.28	—	—	52.52	50.00
87	142	2	50	54.54	49.12	42.00	54.28	—	—	57.57	51.02
88	144	1	53	38.63	52.99	39.00	42.85	—	—	36.36	41.84
89	145	1	63	24.99	29.98	30.00	40.00	—	—	25.25	29.59
90	146	1	58	35.23	34.04	42.00	42.85	—	—	38.38	34.69
91	147	1	59	28.40	30.94	44.00	45.70	—	—	40.40	36.73
92	148	2	44	49.99	46.42	55.00	60.00	—	—	43.43	48.97
93	149	1	43	48.54	51.30	32.00	42.85	—	—	42.42	30.61
94	150	2	45	45.45	43.90	43.00	51.42	—	—	46.46	53.06
95	151	1	51	47.72	49.51	53.00	51.42	—	—	56.56	40.82
96	152	2	35	45.45	52.61	53.00	51.42	—	—	50.50	48.98
97	153	2	41	39.36	46.00	42.00	45.13	—	—	—	—
98	154	2	44	39.58	38.36	35.86	35.20	—	—	37.27	34.00
99	155	2	44	43.75	42.36	45.74	57.00	—	—	45.55	41.00
100	156	1	40	29.16	33.10	29.78	38.00	—	—	37.26	34.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
101	157	2	30	60.41	51.63	59.57	57.00	—	—	55.90	52.00
102	159	2	63	37.51	42.18	44.68	44.00	—	—	46.58	48.00
103	160	1	53	37.50	30.00	31.91	38.00	—	—	38.26	30.00
104	161	2	43	55.20	47.27	44.68	58.00	—	—	47.62	49.00
105	162	1	65	38.54	42.18	34.04	50.00	—	—	34.16	37.00
106	164	1	48	27.08	32.90	26.59	35.20	—	—	27.95	30.00
107	165	2	36	39.58	39.00	36.17	46.00	—	—	49.68	47.00
108	166	1	37	37.50	48.57	35.55	31.25	—	—	38.26	39.00
109	167	2	29	62.50	71.42	55.55	58.33	—	—	42.39	38.71
110	168	2	22	43.75	51.42	40.00	44.79	—	—	40.22	36.56
111	169	2	60	43.75	48.57	44.44	40.62	—	—	36.96	40.86
112	170	2	45	60.41	71.42	57.77	59.38	—	—	35.87	38.71
113	171	2	52	47.90	68.57	48.88	59.38	—	—	54.35	50.54
114	172	1	33	43.33	54.28	61.11	50.00	—	—	49.69	50.00
115	173	1	43	47.90	48.57	53.33	33.00	—	—	39.13	39.78
116	174	2	34	66.66	71.42	66.66	53.12	—	—	54.35	54.84
117	175	2	30	58.30	57.14	66.66	57.29	—	—	50.00	48.25
118	177	2	33	48.95	60.00	66.66	64.28	—	—	56.52	60.22
119	179	2	37	52.08	75.67	48.88	47.91	—	—	41.60	40.50
120	180	2	18	47.90	40.50	40.00	41.66	—	—	38.33	40.00
121	181	1	48	58.30	57.14	55.55	52.63	—	—	—	—
122	182	2	43	44.79	40.00	48.88	48.71	—	—	—	—
123	183	1	48	48.95	62.85	54.44	46.86	—	—	43.33	42.85
124	184	1	37	41.66	60.00	52.45	50.00	—	—	40.00	45.00
125	185	2	28	37.50	51.42	47.77	33.33	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
126	186	1	60	43.75	60.00	42.22	33.00	–	–	34.09	30.00
127	187	2	40	31.25	41.17	40.00	26.33	–	–	29.55	30.00
128	188	2	18	52.08	47.05	41.11	30.74	–	–	47.72	45.00
129	189	2	34	56.25	65.71	54.44	46.87	–	–	54.54	40.00
130	190	1	38	56.25	58.82	52.22	34.52	–	–	34.09	45.00
131	191	2	30	45.83	42.85	42.22	38.75	–	–	37.50	36.17
132	192	2	27	62.50	52.94	52.22	44.71	–	–	0.00	–
133	193	2	27	37.50	44.11	38.88	33.33	–	–	34.09	32.50
134	194	2	46	47.90	52.94	48.85	36.19	–	–	31.82	45.00
135	195	2	30	38.50	40.00	38.88	40.62	–	–	–	–
136	196	2	65	43.75	52.94	46.66	30.50	–	–	–	–
137	197	2	46	46.87	55.88	53.33	48.95	–	–	47.72	40.00
138	198	2	57	34.37	50.00	48.80	40.62	–	–	45.52	47.50
139	199	2	37	33.33	44.11	45.50	33.76	–	–	41.30	45.65
140	200	1	42	37.50	52.94	46.66	43.75	–	–	42.60	46.96
141	201	2	32	54.16	55.88	54.44	47.91	–	–	50.63	49.15
142	204	2	27	39.58	55.88	55.12	37.64	–	–	45.65	50.00
143	205	1	40	34.37	40.00	40.00	29.16	–	–	40.00	39.50
144	206	2	35	62.50	61.77	63.33	54.16	–	–	60.00	55.12
145	207	2	38	48.95	50.00	46.66	43.47	–	–	61.07	59.97
146	209	1	40	39.21	34.61	35.86	39.58	–	–	29.04	38.38
147	210	2	32	41.40	32.67	43.47	35.42	–	–	31.18	39.39
148	211	2	49	54.90	63.46	69.56	62.50	–	–	51.07	48.48
149	212	1	56	60.78	53.50	65.21	58.33	–	–	49.06	52.52
150	213	2	39	41.17	38.00	48.91	39.58	–	–	35.08	40.40

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
151	214	1	45	39.21	32.69	34.04	38.54	—	—	30.01	30.30
152	215	2	36	57.84	38.00	69.56	78.12	—	—	57.04	59.59
153	217	2	50	66.66	53.50	66.30	67.70	—	—	50.80	55.55
154	218	1	50	46.07	38.00	39.13	41.60	—	—	45.51	46.46
155	220	1	57	35.29	32.69	32.60	34.37	—	—	34.50	35.35
156	221	2	33	57.00	54.80	48.91	56.25	—	—	49.12	48.48
157	222	1	30	50.98	47.11	43.47	45.83	—	—	44.44	41.48
158	223	1	52	66.66	63.46	67.39	66.66	—	—	55.94	56.56
159	224	2	39	50.00	44.23	48.26	50.00	—	—	56.33	44.44
160	225	1	53	58.84	50.00	52.17	58.33	—	—	45.61	47.00
161	226	1	22	47.05	38.26	40.21	43.75	—	—	39.57	44.44
162	227	1	24	37.23	38.26	35.21	41.67	—	—	34.51	33.33
163	228	2	48	48.50	46.15	31.52	43.75	—	—	45.83	34.34
164	229	1	40	34.31	35.76	35.85	38.54	—	—	28.27	34.34
165	230	2	32	41.17	34.61	34.04	39.58	—	—	34.31	35.35
166	231	2	44	43.51	44.21	55.55	55.21	—	—	53.93	44.44
167	232	2	28	62.74	65.38	66.66	70.83	—	—	—	—
168	233	2	58	39.25	39.42	30.55	43.45	—	—	—	—
169	235	1	43	37.99	38.46	50.00	44.80	—	—	37.43	40.40
170	238	1	43	31.42	30.76	26.66	35.42	—	—	32.55	33.33
171	239	1	38	44.91	46.15	38.88	57.58	—	—	52.51	50.50
172	241	2	59	53.60	53.84	63.88	87.50	—	—	65.50	63.25
173	242	1	36	38.81	44.53	44.00	42.71	—	—	50.29	55.55
174	243	2	23	45.47	35.57	47.22	53.12	—	—	40.74	52.52
175	247	1	47	39.74	38.46	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
176	248	2	43	41.99	45.76	47.50	54.16	—	—	—	—
177	251	1	18	30.86	28.00	38.88	39.58	—	—	25.93	22.22
178	252	1	45	37.70	39.49	27.00	47.64	—	—	28.85	32.32
179	253	2	32	41.77	53.84	55.50	61.45	—	—	57.12	53.53
180	255	1	40	40.00	42.00	41.12	46.58	—	—	47.82	46.39
181	256	2	34	50.00	48.00	47.39	51.75	—	—	59.78	53.61
182	257	2	26	49.50	48.00	45.83	46.58	—	—	55.43	49.48
183	258	2	23	58.90	64.20	62.50	62.11	—	—	56.52	53.61
184	259	2	24	45.00	37.00	43.75	51.76	—	—	—	—
185	260	2	23	55.73	50.00	51.04	55.90	—	—	60.00	55.67
186	263	2	42	50.00	50.00	45.53	54.00	—	—	—	—
187	264	1	50	—	—	54.25	51.02	—	—	—	—
188	265	2	49	—	—	53.19	50.00	—	—	—	—
189	266	2	36	—	—	35.10	38.78	—	—	—	—
190	267	1	62	—	—	55.32	61.22	—	—	—	—
191	268	2	59	—	—	53.19	50.00	—	—	—	—
192	269	2	32	—	—	50.00	54.08	—	—	—	—
193	271	2	23	—	—	51.63	46.94	—	—	—	—
194	272	2	55	—	—	48.93	43.87	—	—	—	—
195	273	2	27	—	—	51.63	55.10	—	—	—	—
196	274	1	53	—	—	46.80	37.75	—	—	—	—
197	275	2	48	—	—	65.95	59.18	—	—	—	—
198	276	1	19	—	—	51.63	48.97	—	—	—	—
199	277	2	28	—	—	35.10	42.85	—	—	—	—
200	278	2	27	—	—	27.65	29.59	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
201	279	2	65	—	—	29.78	32.67	—	—	—	—
202	280	2	22	—	—	57.44	58.16	—	—	—	—
203	281	2	18	—	—	51.06	48.97	—	—	—	—
204	282	2	42	—	—	53.19	48.97	—	—	—	—
205	283	2	55	—	—	46.80	40.81	—	—	—	—
206	284	2	22	—	—	51.63	55.10	—	—	—	—
207	285	2	19	—	—	65.95	63.26	—	—	—	—
208	286	1	25	—	—	48.93	42.85	—	—	—	—
209	287	2	32	—	—	59.57	53.06	—	—	—	—
210	288	2	27	—	—	54.25	51.02	—	—	—	—
211	289	2	25	—	—	57.44	55.10	—	—	—	—
212	290	2	21	—	—	59.57	58.16	—	—	—	—
213	291	1	50	—	—	46.80	44.89	—	—	—	—
214	292	2	42	—	—	80.85	83.67	—	—	—	—
215	293	1	66	—	—	42.55	38.78	—	—	—	—
216	294	2	33	45.36	44.00	—	—	—	—	—	—
217	298	2	20	38.14	42.00	—	—	—	—	—	—
218	299	2	18	35.05	38.00	—	—	—	—	—	—
219	300	2	45	35.05	37.00	—	—	—	—	—	—
220	301	1	49	52.57	52.00	—	—	—	—	—	—
221	303	2	45	58.76	53.00	—	—	—	—	—	—
222	304	2	30	70.10	58.00	—	—	—	—	—	—
223	305	2	59	68.04	70.00	—	—	—	—	—	—
224	306	2	48	52.57	52.00	—	—	—	—	—	—
225	307	2	19	41.23	36.00	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
226	308	2	18	35.05	32.00	—	—	—	—	—	—
227	309	2	40	55.67	46.00	—	—	—	—	—	—
228	310	2	50	41.23	42.00	—	—	—	—	—	—
229	311	1	23	35.05	36.75	—	—	—	—	—	—
230	312	2	25	43.29	44.00	—	—	—	—	—	—
231	313	1	26	56.70	66.00	—	—	—	—	—	—
232	314	2	42	37.11	35.00	—	—	—	—	—	—
233	315	2	35	39.17	36.00	—	—	—	—	—	—
234	316	2	18	27.83	26.00	—	—	—	—	—	—
235	317	2	20	32.98	37.00	—	—	—	—	—	—
236	318	1	33	—	—	32.65	31.63	—	—	31.25	30.00
237	319	1	65	—	—	26.53	30.61	—	—	25.00	25.00
238	320	2	64	—	—	34.69	36.73	—	—	27.50	30.00
239	321	2	30	—	—	36.73	34.69	—	—	—	—
240	323	2	47	—	—	39.79	37.75	—	—	—	—
241	324	2	52	—	—	44.89	50.00	—	—	52.50	53.75
242	325	2	39	—	—	30.61	32.65	—	—	30.00	32.50
243	326	2	42	—	—	45.91	43.87	—	—	45.00	51.25
244	327	2	21	—	—	53.06	49.49	—	—	47.50	52.50
245	329	1	57	—	—	46.93	51.02	—	—	50.00	50.00
246	330	2	50	—	—	39.79	38.77	—	—	38.00	32.50
247	332	2	28	—	—	46.93	51.02	—	—	52.50	53.75
248	333	1	65	—	—	41.83	44.89	—	—	42.50	37.50
249	334	2	56	—	—	38.77	44.89	—	—	40.00	37.50
250	336	1	36	—	—	38.77	44.89	—	—	35.00	40.00

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
251	337	2	33	–	–	32.65	32.65	–	–	30.00	33.75
252	338	1	54	–	–	55.10	44.89	–	–	40.00	45.00
253	339	2	48	–	–	40.81	40.81	–	–	42.50	45.00
254	340	2	55	–	–	61.22	64.28	–	–	67.50	65.00
255	341	1	34	–	–	38.77	39.79	–	–	31.25	33.75
256	342	1	42	–	–	31.63	31.63	–	–	30.00	37.50
257	343	2	34	–	–	79.59	69.38	–	–	70.00	72.50
258	344	2	31	–	–	42.85	40.81	–	–	–	–

APPENDIX D – LDL Cholesterol (mg/100ml serum)

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
1	1	1	44	144.50	159.46	116.00	152.00	135.17	154.50	127.32	125.38
2	2	2	33	126.10	132.73	99.46	116.80	109.83	116.24	117.92	91.20
3	3	1	50	198.07	176.01	168.17	180.00	189.52	192.43	202.05	179.54
4	4	2	40	138.40	150.18	144.48	149.60	120.51	162.23	170.57	143.19
5	5	2	18	98.70	110.08	120.98	117.32	86.24	78.57	103.60	105.79
6	6	1	44	117.17	123.69	114.65	106.00	106.40	118.36	143.64	118.38
7	7	2	37	141.77	151.27	139.17	142.22	97.95	136.44	144.78	138.85
8	8	2	40	152.10	174.03	169.32	172.60	162.47	209.33	180.23	156.63
9	10	2	18	81.99	92.70	87.14	87.49	75.71	88.83	80.94	65.04
10	11	2	50	214.33	228.00	232.60	228.00	202.37	216.32	186.15	202.20
11	13	1	21	62.33	95.09	91.66	74.83	57.20	66.31	63.84	68.92
12	14	2	24	81.00	106.67	95.00	130.74	89.13	77.86	96.87	103.41
13	15	2	28	108.21	140.18	126.46	112.49	111.67	124.84	111.13	113.22
14	16	2	39	102.00	125.46	110.66	113.35	102.50	102.19	103.25	104.15
15	17	1	18	108.93	136.08	89.34	117.83	92.98	90.69	93.87	111.95
16	18	2	39	112.86	131.67	134.33	112.18	107.89	95.43	102.84	125.25
17	20	1	26	102.44	94.14	109.66	84.55	70.02	100.42	106.11	91.17
18	21	1	20	74.75	79.40	69.31	71.65	67.18	95.84	92.00	72.57
19	24	1	52	141.08	161.21	196.06	196.12	203.00	188.40	172.01	174.97
20	25	1	38	117.29	135.96	154.37	153.30	145.65	131.81	157.81	167.57
21	26	2	29	137.04	128.10	156.60	156.31	133.18	118.74	137.30	149.70
22	27	1	30	120.23	121.00	115.02	121.23	120.84	126.55	97.02	114.93
23	28	1	23	136.80	105.67	115.84	113.60	100.80	132.66	123.02	129.22
24	31	2	25	116.34	94.37	107.67	97.31	94.43	80.88	110.36	100.54
25	32	1	22	127.15	138.83	125.99	96.55	108.40	108.58	78.12	86.90

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
26	33	1	19	98.94	80.86	82.88	98.71	91.49	97.12	85.77	81.16
27	34	1	34	98.19	99.00	102.73	117.83	91.74	105.06	123.45	146.61
28	37	1	29	147.51	113.87	127.90	113.86	120.19	129.22	142.91	140.10
29	38	1	42	97.35	123.08	146.89	144.33	147.91	131.44	118.19	155.02
30	41	1	21	82.15	80.16	90.47	74.11	75.78	89.03	93.53	91.12
31	42	1	25	107.87	122.70	109.35	103.52	107.95	99.92	98.07	98.42
32	51	2	37	124.35	105.81	82.53	82.55	131.34	94.95	137.55	111.14
33	56	2	56	110.20	121.43	152.87	98.64	130.52	134.68	137.51	127.08
34	57	1	62	115.84	129.56	163.83	126.41	132.95	132.05	125.90	105.99
35	58	1	33	133.39	123.24	166.41	153.16	127.41	140.42	123.69	142.88
36	61	1	40	127.14	115.45	78.14	105.60	124.91	104.96	93.28	87.97
37	64	1	30	136.87	132.75	150.74	133.80	127.75	126.97	144.45	139.17
38	65	1	43	124.94	127.07	128.19	142.90	152.95	152.95	101.56	113.54
39	66	2	34	83.94	75.86	65.50	45.06	92.06	115.34	82.78	102.77
40	67	2	27	137.82	136.14	140.04	88.76	117.57	111.42	116.05	116.85
41	68	2	45	117.86	130.72	184.34	159.85	167.41	155.11	116.15	166.44
42	70	2	51	143.33	146.25	124.83	119.59	157.57	167.72	146.18	158.10
43	71	2	20	128.89	115.69	140.00	113.98	119.63	131.17	105.09	91.66
44	72	2	26	115.43	124.80	162.14	95.59	102.00	100.05	93.18	112.21
45	73	2	45	117.44	112.92	100.00	96.42	136.50	135.84	118.70	127.85
46	81	1	22	104.30	79.36	99.68	89.08	101.01	88.51	82.15	82.30
47	82	2	47	102.44	100.15	109.68	117.03	136.04	91.11	116.73	104.12
48	83	2	24	105.44	100.67	97.76	87.15	96.90	100.26	101.23	99.61
49	84	2	22	139.05	136.25	128.35	134.83	136.82	156.57	122.83	131.20
50	85	1	19	54.57	49.94	70.92	61.68	64.85	60.23	66.11	50.66

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
51	87	1	40	122.70	109.00	126.38	101.83	153.54	114.07	130.19	131.35
52	88	2	29	105.00	91.40	160.69	128.83	139.01	133.71	105.07	119.04
53	90	2	65	141.07	163.78	152.41	156.83	161.02	136.00	113.07	115.18
54	95	2	50	122.98	120.30	104.60	106.35	118.45	84.17	111.14	92.87
55	99	1	40	106.26	109.48	128.60	123.43	130.43	97.22	98.11	103.27
56	100	2	31	98.32	124.59	103.08	107.86	125.16	101.30	106.02	118.47
57	101	2	57	102.97	135.84	127.07	128.18	131.71	138.05	125.69	112.35
58	103	1	65	105.17	122.81	111.93	135.84	92.98	109.81	111.57	80.61
59	105	2	24	91.67	108.00	101.36	83.81	104.02	105.52	79.68	80.61
60	106	1	26	108.05	77.13	52.67	65.99	73.60	57.03	66.78	62.19
61	107	1	48	126.94	157.97	131.64	143.00	143.14	138.94	—	—
62	108	2	38	178.74	190.08	170.39	160.48	175.00	160.00	—	—
63	109	2	18	178.16	193.40	134.88	113.29	128.67	131.67	—	—
64	110	1	26	100.71	77.26	57.04	62.99	—	—	—	—
65	114	2	36	114.28	92.78	128.66	131.49	95.86	116.82	—	—
66	116	2	20	101.50	101.13	85.77	99.03	103.35	87.36	—	—
67	117	2	18	121.47	96.42	85.77	81.60	87.33	87.20	—	—
68	119	2	19	148.64	133.80	124.20	101.64	154.75	123.63	—	—
69	120	2	45	159.43	120.15	117.69	119.66	131.27	125.07	—	—
70	122	2	65	142.30	118.56	139.02	131.01	134.49	127.09	—	—
71	123	1	40	92.70	94.46	78.49	86.90	84.47	84.44	—	—
72	125	2	36	106.96	106.45	114.20	86.62	111.74	117.50	—	—
73	126	1	27	135.35	123.59	120.25	107.91	107.14	138.59	—	—
74	127	1	57	101.05	122.35	103.49	85.71	—	—	91.88	88.36
75	128	2	47	177.76	176.26	172.15	157.08	—	—	142.50	137.60

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
76	129	1	51	141.37	153.51	145.87	138.20	–	–	106.42	129.68
77	130	2	40	226.60	254.06	261.08	233.57	–	–	230.02	229.04
78	131	1	58	158.83	192.23	167.25	175.00	–	–	144.15	138.90
79	132	2	46	206.69	208.21	208.36	238.57	–	–	245.88	212.46
80	133	2	23	136.82	155.64	127.13	152.50	–	–	142.15	115.88
81	134	2	40	150.72	164.52	158.92	179.64	–	–	169.42	167.37
82	136	2	29	101.17	141.15	98.40	96.52	–	–	111.79	121.19
83	137	1	49	128.38	139.58	123.68	109.93	–	–	–	–
84	139	1	49	141.88	171.98	140.15	143.58	–	–	–	–
85	140	2	39	113.19	148.20	99.33	153.57	–	–	95.89	128.14
86	141	2	29	102.77	93.68	98.26	102.14	–	–	83.56	63.89
87	142	2	50	135.46	156.45	122.33	116.46	–	–	120.90	108.32
88	144	1	53	120.65	133.18	110.76	165.72	–	–	148.25	142.42
89	145	1	63	116.44	120.67	141.81	120.00	–	–	116.99	104.67
90	146	1	58	161.91	188.19	178.41	129.90	–	–	158.27	144.46
91	147	1	59	156.60	161.69	140.19	152.80	–	–	143.45	113.58
92	148	2	44	108.22	140.47	124.71	134.20	–	–	112.91	122.63
93	149	1	43	141.46	133.15	158.60	149.37	–	–	135.72	125.82
94	150	2	45	174.55	194.42	178.87	183.93	–	–	174.64	178.03
95	151	1	51	119.06	136.89	108.51	126.08	–	–	133.25	146.20
96	152	2	35	155.97	184.73	118.08	106.39	–	–	113.25	101.67
97	153	2	41	118.54	97.63	104.78	92.15	–	–	–	–
98	154	2	44	134.69	105.91	121.52	125.18	–	–	127.44	121.48
99	155	2	44	115.73	143.33	144.85	140.79	–	–	92.52	104.13
100	156	1	40	166.07	131.75	156.41	136.32	–	–	157.64	156.60

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
101	157	2	30	109.94	116.42	101.42	101.70	—	—	101.65	100.76
102	159	2	63	158.20	141.66	136.57	96.77	—	—	126.62	132.42
103	160	1	53	163.30	150.66	152.49	141.74	—	—	145.12	123.05
104	161	2	43	176.91	186.71	153.45	155.50	—	—	166.49	165.12
105	162	1	65	129.54	100.00	122.50	108.18	—	—	120.96	121.38
106	164	1	48	100.15	90.79	65.31	66.75	—	—	85.00	65.62
107	165	2	36	122.49	109.26	99.78	97.63	—	—	102.71	100.00
108	166	1	37	130.97	134.97	129.12	119.25	—	—	140.41	141.80
109	167	2	29	116.48	125.03	122.49	126.75	—	—	156.24	133.29
110	168	2	22	84.73	77.18	74.67	84.36	—	—	87.02	101.04
111	169	2	60	101.70	115.40	106.73	132.23	—	—	116.71	113.34
112	170	2	45	125.04	137.93	161.45	133.27	—	—	160.60	165.69
113	171	2	52	122.49	100.74	103.39	115.13	—	—	127.13	117.46
114	172	1	33	137.28	153.72	175.25	179.45	—	—	151.68	158.00
115	173	1	43	67.25	67.13	59.66	65.82	—	—	95.84	92.22
116	174	2	34	90.17	99.22	100.61	86.02	—	—	109.19	101.16
117	175	2	30	118.80	126.40	144.63	138.47	—	—	167.53	154.89
118	177	2	33	122.50	143.10	143.21	161.62	—	—	107.93	138.18
119	179	2	37	59.61	64.98	93.65	72.05	—	—	97.30	117.50
120	180	2	18	87.55	78.35	88.30	90.56	—	—	110.41	97.00
121	181	1	48	118.05	113.50	106.00	102.10	—	—	—	—
122	182	2	43	84.84	120.64	111.50	93.28	—	—	—	—
123	183	1	48	108.40	120.69	98.28	132.40	—	—	120.49	120.69
124	184	1	37	150.51	120.21	127.68	141.44	—	—	165.14	129.40
125	185	2	28	95.27	106.30	80.54	83.55	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
126	186	1	60	128.84	139.35	112.78	117.60	–	–	161.88	139.60
127	187	2	40	102.20	92.32	115.84	108.86	–	–	117.47	124.60
128	188	2	18	108.96	104.02	119.27	165.16	–	–	123.36	124.04
129	189	2	34	104.16	101.83	113.60	112.10	–	–	126.37	131.85
130	190	1	38	103.82	118.05	85.71	84.26	–	–	110.25	81.80
131	191	2	30	110.75	124.46	114.79	93.47	–	–	139.18	116.05
132	192	2	27	87.75	78.99	83.50	69.47	–	–	–	–
133	193	2	27	97.96	104.05	98.66	90.82	–	–	96.88	104.96
134	194	2	46	94.09	101.03	80.24	79.43	–	–	129.41	103.63
135	195	2	30	92.40	99.40	92.55	124.89	–	–	–	–
136	196	2	65	139.45	133.51	131.65	133.26	–	–	–	–
137	197	2	46	120.09	104.76	96.28	118.93	–	–	120.13	143.67
138	198	2	57	94.29	91.49	68.74	72.78	–	–	77.88	78.20
139	199	2	37	121.14	103.19	112.80	89.98	–	–	118.81	93.80
140	200	1	42	96.74	88.56	107.24	89.85	–	–	116.20	99.71
141	201	2	32	114.69	105.19	140.36	113.19	–	–	112.17	94.55
142	204	2	27	124.66	109.28	129.88	137.96	–	–	141.95	151.48
143	205	1	40	127.74	86.90	93.24	110.97	–	–	84.80	69.20
144	206	2	35	83.55	82.74	97.05	91.89	–	–	101.12	95.98
145	207	2	38	131.66	117.31	98.40	108.31	–	–	87.00	88.32
146	209	1	40	133.90	131.23	124.62	142.84	–	–	127.26	141.62
147	210	2	32	161.38	182.49	158.53	194.55	–	–	166.65	185.46
148	211	2	49	143.18	154.51	147.15	161.18	–	–	162.71	179.19
149	212	1	56	84.39	69.81	82.41	82.69	–	–	101.74	101.88
150	213	2	39	124.88	106.97	88.18	104.38	–	–	122.16	121.27

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
151	214	1	45	115.97	135.43	118.10	103.57	—	—	130.53	125.37
152	215	2	36	79.88	75.11	87.89	78.91	—	—	91.66	109.74
153	217	2	50	225.52	178.70	199.72	189.52	—	—	199.30	236.95
154	218	1	50	152.67	161.13	130.39	159.70	—	—	133.23	174.79
155	220	1	57	135.80	147.83	140.57	122.65	—	—	136.31	158.26
156	221	2	33	129.80	125.20	117.75	110.70	—	—	131.00	164.19
157	222	1	30	142.27	102.45	114.15	134.03	—	—	141.00	143.52
158	223	1	52	152.28	132.39	115.22	118.65	—	—	117.00	135.59
159	224	2	39	130.41	108.04	152.91	105.23	—	—	141.00	115.37
160	225	1	53	141.96	132.64	139.63	114.01	—	—	133.70	144.23
161	226	1	22	132.45	135.83	134.94	130.00	—	—	132.28	138.00
162	227	1	24	237.23	228.40	187.98	186.35	—	—	193.03	205.66
163	228	2	48	96.08	99.82	99.85	114.85	—	—	104.21	109.66
164	229	1	40	147.06	129.93	131.19	143.54	—	—	131.10	149.98
165	230	2	32	128.82	132.41	156.98	93.13	—	—	113.16	125.00
166	231	2	44	128.71	155.76	96.67	140.46	—	—	104.77	141.11
167	232	2	28	133.70	143.05	135.56	106.53	—	—	—	—
168	233	2	58	177.03	179.61	210.08	133.42	—	—	—	—
169	235	1	43	208.90	208.53	199.84	183.84	—	—	197.06	198.27
170	238	1	43	135.54	125.86	122.54	79.58	—	—	134.99	116.00
171	239	1	38	117.29	149.12	139.85	153.18	—	—	98.99	133.75
172	241	2	59	201.98	199.39	151.67	154.10	—	—	166.79	168.25
173	242	1	36	144.32	163.26	161.71	138.27	—	—	100.23	114.78
174	243	2	23	139.61	124.48	170.17	148.67	—	—	161.83	172.89
175	247	1	47	156.81	128.16	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
176	248	2	43	90.56	66.04	67.33	46.12	—	—	69.30	84.85
177	251	1	18	121.98	113.95	117.14	127.38	—	—	146.48	156.45
178	252	1	45	119.39	126.34	126.65	117.60	—	—	102.38	104.29
179	253	2	32	147.08	124.47	124.34	134.30	—	—	142.17	153.14
180	255	1	40	89.86	95.21	86.15	81.70	—	—	87.26	96.62
181	256	2	34	146.59	142.26	135.47	127.89	—	—	152.22	145.59
182	257	2	26	101.30	124.00	102.74	123.30	—	—	124.00	128.60
183	258	2	23	89.24	125.18	81.39	95.44	—	—	84.11	111.63
184	259	2	24	87.80	84.56	87.04	92.72	—	—	—	—
185	260	2	23	131.98	161.22	139.64	153.27	—	—	113.19	147.04
186	263	2	42	118.20	101.04	116.61	106.93	—	—	—	—
187	264	1	50	—	—	129.62	126.51	—	—	—	—
188	265	2	49	—	—	154.94	168.94	—	—	—	—
189	266	2	36	—	—	149.96	143.82	—	—	—	—
190	267	1	62	—	—	95.76	81.24	—	—	—	—
191	268	2	59	—	—	109.44	110.19	—	—	—	—
192	269	2	32	—	—	102.43	111.11	—	—	—	—
193	271	2	23	—	—	147.84	132.37	—	—	—	—
194	272	2	55	—	—	127.85	145.10	—	—	—	—
195	273	2	27	—	—	95.47	105.96	—	—	—	—
196	274	1	53	—	—	132.35	117.79	—	—	—	—
197	275	2	48	—	—	152.16	128.05	—	—	—	—
198	276	1	19	—	—	85.54	71.60	—	—	—	—
199	277	2	28	—	—	106.67	113.12	—	—	—	—
200	278	2	27	—	—	111.15	97.69	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
201	279	2	65	—	—	144.27	156.45	—	—	—	—
202	280	2	22	—	—	137.28	155.76	—	—	—	—
203	281	2	18	—	—	83.07	90.37	—	—	—	—
204	282	2	42	—	—	138.13	126.20	—	—	—	—
205	283	2	55	—	—	140.56	140.52	—	—	—	—
206	284	2	22	—	—	85.89	99.57	—	—	—	—
207	285	2	19	—	—	67.75	60.07	—	—	—	—
208	286	1	25	—	—	122.52	133.70	—	—	—	—
209	287	2	32	—	—	139.20	175.87	—	—	—	—
210	288	2	27	—	—	107.69	105.90	—	—	—	—
211	289	2	25	—	—	110.62	153.05	—	—	—	—
212	290	2	21	—	—	110.89	122.18	—	—	—	—
213	291	1	50	—	—	98.97	111.52	—	—	—	—
214	292	2	42	—	—	184.00	177.47	—	—	—	—
215	293	1	66	—	—	69.44	61.82	—	—	—	—
216	294	2	33	95.17	110.30	—	—	—	—	—	—
217	298	2	20	90.38	95.45	—	—	—	—	—	—
218	299	2	18	100.30	98.67	—	—	—	—	—	—
219	300	2	45	114.68	105.33	—	—	—	—	—	—
220	301	1	49	132.63	138.98	—	—	—	—	—	—
221	303	2	45	146.01	127.23	—	—	—	—	—	—
222	304	2	30	94.23	94.96	—	—	—	—	—	—
223	305	2	59	104.59	123.09	—	—	—	—	—	—
224	306	2	48	92.78	94.72	—	—	—	—	—	—
225	307	2	19	84.13	95.57	—	—	—	—	—	—

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
226	308	2	18	80.75	79.27	—	—	—	—	—	—
227	309	2	40	85.54	102.48	—	—	—	—	—	—
228	310	2	50	107.18	109.08	—	—	—	—	—	—
229	311	1	23	89.97	89.54	—	—	—	—	—	—
230	312	2	25	105.28	106.85	—	—	—	—	—	—
231	313	1	26	100.44	85.09	—	—	—	—	—	—
232	314	2	42	124.38	135.67	—	—	—	—	—	—
233	315	2	35	102.56	96.90	—	—	—	—	—	—
234	316	2	18	71.25	69.76	—	—	—	—	—	—
235	317	2	20	81.12	97.78	—	—	—	—	—	—
236	318	1	33	—	—	109.81	112.08	—	—	131.99	127.49
237	319	1	65	—	—	145.98	148.29	—	—	125.00	131.58
238	320	2	64	—	—	178.93	145.80	—	—	149.50	142.46
239	321	2	30	—	—	111.04	105.72	—	—	—	—
240	323	2	47	—	—	156.86	57.47	—	—	—	—
241	324	2	52	—	—	86.28	94.94	—	—	93.76	83.93
242	325	2	39	—	—	96.69	107.90	—	—	121.69	106.24
243	326	2	42	—	—	87.77	94.96	—	—	90.37	90.35
244	327	2	21	—	—	115.59	102.12	—	—	98.33	97.63
245	329	1	57	—	—	109.58	124.50	—	—	125.30	116.00
246	330	2	50	—	—	99.18	107.50	—	—	112.22	92.69
247	332	2	28	—	—	96.65	98.08	—	—	106.40	113.77
248	333	1	65	—	—	144.24	37.86	—	—	116.02	132.49
249	334	2	56	—	—	114.98	115.01	—	—	114.36	105.83
250	336	1	36	—	—	82.21	80.63	—	—	87.48	91.83

Sl. No.	V.No	Sex	Age	Stage I		Stage II		Stage III		Stage IV	
				Initial	Final	Initial	Final	Initial	Final	Initial	Final
251	337	2	33	—	—	115.76	101.97	—	—	93.92	107.68
252	338	1	54	—	—	114.03	130.05	—	—	106.45	110.43
253	339	2	48	—	—	123.41	151.74	—	—	139.53	133.69
254	340	2	55	—	—	85.50	65.08	—	—	69.56	76.25
255	341	1	34	—	—	88.25	84.44	—	—	94.36	104.66
256	342	1	42	—	—	97.77	122.37	—	—	106.19	112.32
257	343	2	34	—	—	106.59	97.05	—	—	104.52	118.08
258	344	2	31	—	—	96.12	88.93	—	—	—	—

APPENDIX E – Diet Data – Pre-trial Period

Sl. No.	V.No.	category	Dist- rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo- hydrate intake	% cotrib. of fat	Fish consum- ption	Caloric intake
1	1	2	1	45.80	18.32	16.60	34.92	71.00	368.80	13.12	100.00	2396.00
2	2	2	1	45.80	18.32	16.60	34.92	59.50	298.70	16.78	100.00	1912.00
3	3	2	1	45.00	18.00	16.60	34.60	65.90	365.90	13.13	80.00	2373.00
4	4	2	1	45.00	18.00	16.60	34.60	57.30	305.50	15.12	95.00	2159.00
5	5	2	1	45.00	18.00	16.60	34.60	44.20	292.00	15.97	78.00	1950.00
6	6	2	1	73.30	29.32	14.50	43.82	70.80	345.00	17.96	50.00	1918.00
7	7	2	1	73.30	29.32	14.50	43.82	70.20	328.00	18.16	50.00	2092.00
8	8	2	1	55.00	22.00	26.30	48.30	90.30	338.00	17.44	125.00	2512.00
9	10	2	1	45.00	18.00	16.60	34.60	47.10	261.90	17.42	50.00	1787.00
10	11	2	1	56.00	22.40	17.99	40.39	81.40	388.70	13.48	60.00	2697.00
11	13	2	1	55.00	22.00	17.99	39.99	54.80	325.20	18.59	0.00	1935.00
12	14	2	1	56.00	22.40	17.99	40.39	77.40	349.70	18.42	60.00	1974.00
13	15	2	1	50.00	20.00	16.86	36.86	51.60	346.10	16.93	110.00	1959.00
14	16	2	1	50.00	20.00	14.62	34.62	51.50	285.30	19.11	110.00	1631.00
15	17	2	1	50.00	20.00	13.60	33.60	43.80	252.50	19.32	85.00	1566.00
16	18	2	1	75.00	30.00	11.04	41.04	60.50	284.50	16.17	110.00	2285.00
17	20	2	2	75.00	30.00	12.00	42.00	74.10	412.00	13.67	90.00	2702.00
18	21	2	2	56.00	22.40	12.00	34.40	56.50	362.70	19.50	60.00	1993.00
19	24	2	1	80.00	32.00	20.80	52.80	52.90	330.70	15.90	85.00	2416.00
20	25	2	1	56.00	22.40	16.00	38.40	60.20	304.70	16.55	40.00	1981.00
21	26	2	1	56.00	22.40	16.00	38.40	57.60	321.80	15.72	40.00	1853.00
22	27	2	2	50.00	24.00	15.00	39.00	72.10	333.50	13.74	100.00	2264.00

Sl. No.	V.No.	category	Dist- rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo- hydrate intake	% cotrib. of fat	Fish consum- ption	Caloric intake
23	28	2	2	70.00	28.00	14.00	42.00	41.60	248.70	17.50	60.00	2058.00
24	31	2	2	55.00	22.00	15.50	37.50	46.00	233.40	17.67	100.00	1870.00
25	32	2	2	75.00	30.00	18.00	48.00	81.90	451.20	16.18	100.00	2674.00
26	33	2	2	60.00	24.00	14.00	38.00	61.70	395.00	16.11	100.00	2336.00
27	34	2	2	75.00	30.00	15.00	45.00	75.10	393.60	17.77	120.00	2684.00
28	37	2	2	80.00	32.00	16.60	48.60	63.70	376.80	16.31	105.00	2487.00
29	38	2	2	80.00	32.00	16.60	48.60	50.60	434.20	20.50	100.00	2497.00
30	41	2	2	55.00	22.00	13.30	35.30	47.40	170.70	16.66	120.00	1538.00
31	42	2	2	55.00	22.00	14.00	36.00	45.60	243.10	19.31	100.00	1629.00
32	51	2	2	55.00	22.00	14.00	36.00	58.30	373.80	12.61	100.00	2645.00
33	56	2	2	75.00	30.00	14.00	44.00	58.50	282.00	19.61	70.00	1908.00
34	57	2	2	75.00	30.00	14.00	44.00	85.60	417.50	13.83	140.00	2438.00
35	58	2	2	75.00	30.00	14.00	44.00	88.30	503.00	13.81	100.00	2893.00
36	61	2	2	70.00	28.00	16.60	44.60	74.60	514.50	17.04	100.00	2842.00
37	64	2	2	55.00	22.00	8.00	30.00	89.00	422.50	15.31	140.00	2607.00
38	65	2	2	60.00	24.00	14.00	38.00	45.00	421.60	17.26	200.00	2326.00
39	66	2	2	70.00	28.00	16.60	44.60	75.50	439.40	15.71	100.00	2428.00
40	67	2	2	55.00	22.00	16.60	38.60	52.40	279.00	18.26	120.00	1948.00
41	68	2	2	66.66	26.67	8.88	35.55	52.90	385.50	14.64	60.00	2132.00
42	70	2	2	56.00	22.40	7.80	30.20	81.60	236.50	14.64	120.00	1966.00
43	71	2	2	60.00	24.00	8.88	32.88	37.70	332.20	13.92	100.00	2160.00
44	72	2	2	55.00	22.00	8.00	30.00	34.60	333.90	12.76	100.00	1772.00

Sl. No.	V.No.	cate-gory	Dist-riect	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
45	73	2	2	60.00	24.00	8.28	32.28	39.10	371.90	12.94	160.00	1904.00
46	81	2	2	52.00	20.80	14.60	35.40	66.90	359.20	14.72	80.00	2167.00
47	82	2	2	52.00	20.80	14.60	35.40	68.80	286.00	15.83	78.00	2013.00
48	83	2	2	50.00	20.00	15.40	35.40	45.70	265.00	17.41	76.00	1830.00
49	84	2	2	50.00	20.00	15.40	35.40	43.00	295.00	16.88	80.00	1888.00
50	85	2	2	55.00	22.00	15.40	37.40	55.00	302.00	16.71	88.00	2014.00
51	87	2	2	55.00	22.00	13.30	35.30	56.80	308.00	14.18	40.00	2242.00
52	88	2	2	55.00	22.00	13.30	35.30	55.60	305.10	14.28	40.00	2225.00
53	90	2	2	55.00	22.00	13.30	35.30	58.00	307.60	14.47	42.00	2195.00
54	95	2	2	52.00	20.80	15.00	35.80	58.30	308.00	15.96	60.00	2019.00
55	99	2	2	43.00	17.20	11.00	28.20	56.20	285.10	13.23	62.00	1817.00
56	100	2	2	43.00	17.20	11.00	28.20	54.00	282.00	13.22	65.00	1820.00
57	101	2	2	43.00	17.20	11.00	28.20	52.00	278.00	13.93	68.00	1822.00
58	103	2	2	42.00	16.80	12.00	28.80	49.10	315.00	12.11	60.00	2140.00
59	105	2	2	42.00	16.80	12.00	28.80	48.00	286.00	13.33	58.00	1944.00
60	106	2	2	42.00	16.80	12.00	28.80	49.00	305.00	12.59	100.00	2058.00
61	107	2	2	70.00	28.00	14.00	42.00	42.60	419.80	14.77	120.00	2559.00
62	108	2	2	52.00	20.40	12.60	33.00	40.30	319.60	15.42	91.00	1949.00
63	109	2	2	56.00	22.40	10.60	33.00	38.00	301.10	13.98	60.00	2125.00
64	110	2	2	53.00	21.20	14.00	35.20	66.90	300.10	13.68	0.00	2316.00
65	114	2	2	54.00	21.60	12.00	33.60	80.30	294.50	13.86	110.00	2182.00
66	116	2	2	55.00	22.00	12.00	34.00	84.00	308.00	14.06	90.00	2176.00

Sl. No.	V.No.	cate-gory	Dist-rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
67	117	2	2	58.00	23.20	15.00	38.20	51.60	285.10	13.33	100.00	2296.00
68	119	2	2	58.00	23.20	15.00	38.20	49.50	305.20	15.03	82.00	1736.00
69	120	2	2	33.33	13.33	14.00	27.33	45.50	309.00	13.14	70.00	1986.00
70	122	2	2	50.00	20.00	19.08	39.08	66.30	357.60	16.04	50.00	1908.00
71	123	2	2	50.00	20.00	19.08	39.08	40.60	124.10	11.99	40.00	2522.00
72	125	2	2	58.30	23.32	12.49	35.80	49.10	219.00	17.16	100.00	1814.00
73	126	2	2	55.00	22.00	16.60	38.60	107.00	263.90	15.57	105.00	1896.00
74	127	2	3.00	55.00	22.00	16.60	38.60	41.70	171.70	15.35	120.00	2266.00
75	128	2	3.00	59.00	23.60	12.60	36.20	79.10	423.10	18.73	80.00	1856.00
76	129	2	3.00	59.00	23.60	12.60	36.20	83.70	382.40	19.48	100.00	1774.00
77	130	2	3.00	54.00	21.60	16.18	37.78	75.30	232.10	15.94	80.00	2169.00
78	131	2	3.00	54.00	21.60	16.18	37.78	84.00	227.60	12.67	95.00	2686.00
79	132	2	3.00	58.00	23.20	16.00	39.20	54.20	185.10	14.62	110.00	2429.00
80	133	2	3.00	60.00	24.00	16.60	40.60	74.60	157.10	15.12	100.00	2251.00
81	134	2	3.00	60.00	24.00	16.60	40.60	89.00	211.60	17.50	120.00	2017.00
82	136	2	3.00	56.00	22.40	12.20	34.60	54.00	214.80	16.40	80.00	2134.00
83	137	2	3.00	55.00	22.00	12.60	34.60	29.50	181.50	21.54	120.00	1671.00
84	139	2	3.00	55.00	22.00	15.00	37.00	56.70	237.90	10.73	100.00	2708.00
85	140	2	3.00	54.50	21.80	14.00	35.80	62.00	310.00	11.97	100.00	2427.00
86	141	2	3.00	56.00	22.40	14.00	36.40	72.60	358.00	15.56	120.00	1908.00
87	142	2	3.00	56.00	22.40	14.00	36.40	47.20	292.40	14.20	120.00	1981.00
88	144	2	3.00	53.00	21.20	20.00	41.20	70.90	390.20	13.49	140.00	2681.00

Sl. No.	V.No.	cate-gory	Dist-rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
89	145	2	3.00	53.00	21.20	20.00	41.20	70.00	321.60	15.34	200.00	2335.00
90	146	2	3.00	52.50	21.00	15.00	36.00	52.30	399.00	11.29	180.00	2405.00
91	147	2	3.00	65.00	22.00	12.00	34.00	63.90	373.00	16.32	125.00	2199.00
92	148	2	3.00	65.00	22.00	12.00	34.00	91.60	342.70	15.56	120.00	2233.00
93	149	2	3.00	65.00	22.00	12.00	34.00	58.60	407.30	16.44	180.00	1845.00
94	150	2	3.00	62.00	24.80	7.00	31.80	45.90	429.60	12.70	120.00	2481.00
95	151	2	3.00	55.00	22.00	14.00	36.00	66.60	385.70	11.08	100.00	2844.00
96	152	2	3.00	58.00	23.30	13.30	36.60	74.50	405.20	16.07	120.00	1893.00
97	153	1	5.00	58.00	23.30	13.30	36.60	85.90	457.60	17.39	–	1984.00
98	154	1	5.00	40.00	16.00	10.00	26.00	86.70	374.50	14.53	–	2385.00
99	155	2	5.00	55.00	22.00	16.00	38.00	47.60	217.30	13.96	80.00	1998.00
100	156	1	5.00	58.00	23.20	15.00	38.20	51.60	285.10	17.39	–	1997.00
101	157	1	5.00	58.00	23.20	15.00	38.20	49.50	305.20	17.33	–	1984.00
102	159	1	5.00	33.33	13.33	14.00	27.33	45.50	309.00	12.32	–	1997.00
103	160	2	5.00	50.00	20.00	19.08	39.08	66.30	357.60	14.09	85.00	2497.00
104	161	2	5.00	50.00	20.00	19.08	39.08	40.60	124.10	23.61	92.00	1490.00
105	162	2	5.00	58.30	23.32	12.49	35.80	49.10	219.00	20.94	80.00	1539.00
106	164	2	5.00	55.00	22.00	16.60	38.60	107.00	263.90	16.15	140.00	2154.00
107	165	2	5.00	55.00	22.00	16.60	38.60	41.70	171.70	23.78	120.00	1463.00
108	166	2	2	59.00	23.60	12.60	36.20	79.40	423.10	11.34	82.00	2874.00
109	167	2	2	59.00	23.60	12.60	36.20	83.70	382.40	12.19	80.00	2673.00
110	168	2	2	54.00	21.60	16.18	37.78	75.30	232.10	19.15	80.00	1776.00

Sl. No.	V.No.	cate-gory	Dist-rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
111	169	2	2	54.00	21.60	16.18	37.78	84.00	227.60	17.35	105.00	1960.00
112	170	2	2	58.00	23.20	16.00	39.20	54.20	185.10	22.48	50.00	1569.00
113	171	2	2	60.00	24.00	16.60	40.60	74.60	157.10	19.50	60.00	1874.00
114	172	2	2	60.00	24.00	16.60	40.60	89.00	211.60	20.08	80.00	1819.00
115	173	2	2	56.00	22.40	12.20	34.60	54.00	214.80	16.49	110.00	1891.00
116	174	2	2	55.00	22.00	12.60	34.60	29.50	181.50	19.32	60.00	1611.00
117	175	2	2	55.00	22.00	15.00	37.00	56.70	237.90	19.80	40.00	1682.00
118	177	2	2	54.50	21.80	14.00	35.80	62.00	310.00	16.14	55.00	1996.00
119	179	2	2	56.00	22.40	14.00	36.40	72.60	358.00	16.52	43.00	1983.00
120	180	2	2	56.00	22.40	14.00	36.40	47.20	292.40	18.68	56.00	1754.00
121	181	2	2	53.00	21.20	20.00	41.20	70.90	390.20	14.87	80.00	2493.00
122	182	2	2	53.00	21.20	20.00	41.20	70.00	321.60	17.41	60.00	2130.00
123	183	2	2	52.50	21.00	15.00	36.00	52.30	399.00	13.64	80.00	2376.00
124	184	2	2	65.00	22.00	12.00	34.00	63.90	373.00	14.10	98.00	2311.00
125	185	2	2	65.00	22.00	12.00	34.00	91.60	342.70	15.33	90.00	2232.00
126	186	2	2	65.00	22.00	12.00	34.00	58.60	407.30	14.06	100.00	2433.00
127	187	2	2	52.00	24.80	7.00	31.80	45.90	429.60	12.16	80.00	2353.00
128	188	2	2	55.00	22.00	14.00	36.00	66.60	385.70	13.50	106.00	2400.00
129	189	2	2	58.00	23.30	13.30	36.60	74.50	405.20	13.85	120.00	2377.00
130	190	2	2	58.00	23.30	13.30	36.60	85.90	457.60	11.54	180.00	2854.00
131	191	2	2	40.00	16.00	10.00	26.00	86.70	374.50	10.33	81.66	2265.00
132	192	2	2	55.00	22.00	16.00	38.00	47.60	217.30	15.42	120.00	2219.00

Sl. No.	V.No.	category	Dist- rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo- hydrate intake	% cotrib. of fat	Fish consum- ption	Caloric intake
133	193	2	2	54.00	21.60	12.50	34.10	57.00	394.50	11.74	90.00	2614.00
134	194	2	2	52.00	20.80	15.00	35.80	47.80	366.50	14.19	80.00	2271.00
135	195	2	2	37.50	15.00	16.60	31.60	51.50	371.30	14.23	90.00	1998.00
136	196	2	2	49.00	19.60	12.00	31.60	65.40	340.60	14.63	80.00	1944.00
137	197	2	2	50.00	20.00	14.50	34.50	71.60	246.00	16.63	136.66	1867.00
138	198	2	2	50.00	21.20	15.00	36.20	58.60	351.50	16.52	135.00	1972.00
139	199	2	2	52.50	21.00	11.11	32.11	48.90	420.20	11.15	80.00	2591.00
140	200	2	2	61.00	24.40	16.00	40.00	69.20	314.90	16.84	80.00	2138.00
141	201	2	2	61.00	24.40	16.00	40.00	59.20	299.30	18.05	80.00	1994.00
142	204	2	2	54.00	21.60	16.00	37.60	27.20	230.40	15.63	90.00	2165.00
143	205	2	2	60.00	24.00	14.00	38.00	20.60	294.00	15.67	112.50	2182.00
144	206	2	2	60.00	24.00	14.00	38.00	53.70	266.00	18.83	100.00	1816.00
145	207	2	2	56.00	22.40	9.00	31.40	43.10	409.00	12.76	95.00	2215.00
146	209	2	4.00	50.00	20.00	6.00	36.00	104.90	286.40	14.68	80.00	2207.00
147	210	2	4.00	50.00	20.00	16.00	36.00	92.10	402.20	12.23	78.00	2650.00
148	211	2	4.00	45.00	18.00	14.60	32.60	92.60	238.40	15.18	52.00	1856.00
149	212	2	4.00	60.50	24.20	16.60	40.80	54.20	353.30	16.44	30.00	2234.00
150	213	2	4.00	60.50	24.20	16.60	40.80	86.40	305.30	19.64	80.00	1869.00
151	214	2	4.00	37.50	15.00	25.00	40.00	80.10	309.80	18.01	88.00	1999.00
152	215	2	4.00	37.50	15.00	25.00	40.00	106.30	304.60	16.60	80.00	2169.00
153	217	2	4.00	59.00	23.60	16.00	39.60	92.10	402.20	13.63	80.00	2615.00
154	218	2	4.00	56.00	22.40	16.00	38.40	78.90	420.20	13.25	50.00	2608.00

Sl. No.	V.No.	cate-gory	Dist-rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
155	220	2	4.00	50.00	24.00	25.00	49.00	95.60	263.90	19.93	60.00	2213.00
156	221	2	4.00	55.00	22.00	8.00	30.00	40.60	376.10	15.15	80.00	1782.00
157	222	2	4.00	53.00	21.20	22.80	44.00	103.80	321.60	15.36	100.00	2578.00
158	223	2	4.00	74.00	29.60	10.40	40.00	98.10	330.20	17.16	80.00	2098.00
159	224	2	4.00	20.80	8.32	25.00	66.62	53.60	302.40	15.49	125.00	1936.00
160	225	2	4.00	55.00	22.00	20.00	42.00	47.80	404.50	16.06	140.00	2354.00
161	226	2	4.00	52.00	20.80	37.50	58.30	92.20	301.90	19.78	112.50	2653.00
162	227	2	4.00	52.00	20.80	37.50	58.30	96.80	217.50	24.33	120.00	2157.00
163	228	2	4.00	51.00	20.40	37.50	57.90	84.20	227.90	17.51	80.00	1894.00
164	229	2	4.00	60.00	24.00	22.00	46.00	71.50	429.30	17.71	80.00	2338.00
165	230	2	4.00	60.00	24.00	22.00	46.00	55.30	251.00	21.85	80.00	1894.00
166	231	2	4.00	62.00	24.80	15.80	40.60	43.80	412.40	16.09	78.00	2270.00
167	232	2	4.00	60.00	24.00	10.00	34.00	56.70	251.60	18.43	85.00	1660.00
168	233	2	4.00	54.00	21.60	16.00	37.60	51.70	299.00	18.70	90.00	1809.00
169	235	2	4.00	45.00	18.00	16.60	34.60	54.60	379.20	13.94	100.00	2234.00
170	238	2	4.00	55.00	22.00	10.00	32.00	134.50	350.60	10.68	80.00	2697.00
171	239	2	4.00	50.00	20.00	16.00	36.00	70.70	329.40	12.84	76.00	2523.00
172	241	2	4.00	50.00	20.00	16.11	36.11	64.50	198.70	17.61	100.00	1845.00
173	242	2	4.00	52.50	21.00	22.00	43.00	107.00	309.00	16.22	45.00	2385.00
174	243	2	4.00	52.50	21.00	21.00	42.00	102.00	221.50	18.56	48.00	2036.00
175	247	2	4.00	50.00	20.00	16.00	36.00	83.10	362.50	12.84	75.00	2429.00
176	248	2	4.00	62.50	25.00	16.60	41.60	109.20	391.40	14.58	80.00	2568.00

Sl. No.	V.No.	category	District	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbohydrate intake	% cotrib. of fat	Fish consumption	Caloric intake
177	251	2	4.00	58.00	23.20	38.00	61.20	61.40	254.80	18.59	115.00	1927.00
178	252	2	4.00	58.00	23.20	38.00	61.20	85.10	384.10	18.03	100.00	3005.00
179	253	2	4.00	58.00	23.20	38.00	61.20	71.20	413.00	19.60	120.00	2811.00
180	255	2	1	55.00	22.00	15.60	37.60	70.80	303.10	16.98	100.00	1993.00
181	256	2	1	55.00	22.00	15.00	37.00	83.10	362.50	13.93	110.00	2429.00
182	257	2	1	40.00	16.00	15.00	31.00	59.90	201.90	16.33	40.00	1763.00
183	258	1	1	42.00	16.80	14.00	30.80	46.90	203.00	17.13	0.00	1671.00
184	259	2	1	55.00	22.00	16.00	38.00	53.40	307.80	17.04	40.00	1901.00
185	260	2	1	40.00	16.00	16.00	32.00	66.10	244.50	15.20	40.00	1894.00
186	263	2	5.00	45.00	18.00	13.00	31.00	55.10	311.40	14.58	45.00	1984.00
187	264	2	2	55.00	22.00	13.50	35.50	72.30	207.00	19.25	180.00	1660.00
188	265	2	2	55.00	22.00	13.50	35.50	50.50	212.10	19.50	110.00	1637.00
189	266	2	2	57.50	23.00	15.00	38.00	70.00	261.80	20.74	60.00	1875.00
190	267	2	2	56.00	22.40	16.60	39.00	63.30	376.50	14.39	110.00	2438.00
191	268	2	2	56.00	22.40	16.60	39.00	66.60	405.80	13.96	100.00	2516.00
192	269	2	2	60.00	24.00	16.60	40.60	90.10	396.60	15.17	100.00	2409.00
193	271	2	2	51.00	20.40	8.00	28.40	59.30	320.90	10.34	90.00	2470.00
194	272	2	2	80.00	32.00	12.50	44.50	52.90	242.60	26.48	120.00	1512.00
195	273	2	2	80.00	32.00	12.50	44.50	69.30	407.40	18.50	90.00	2162.00
196	274	2	2	85.00	34.00	22.22	56.22	64.60	436.90	19.40	200.00	2605.00
197	275	2	2	86.00	34.40	20.00	54.40	62.60	387.00	22.11	185.00	2214.00
198	276	2	2	86.00	34.40	20.00	54.40	56.80	410.00	19.24	200.00	2374.00

Sl. No.	V.No.	cate-gory	Dist-rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo-hydrate intake	% cotrib. of fat	Fish consum-ption	Caloric intake
199	277	2	2	51.00	20.40	8.00	28.40	50.00	250.90	15.19	85.00	1683.00
200	278	2	2	58.00	23.20	15.00	38.20	65.00	335.70	18.00	110.00	1910.00
201	279	2	2	58.00	23.20	15.00	38.20	65.50	339.70	17.79	125.00	1932.00
202	280	2	2	55.00	22.00	12.00	34.00	62.70	314.50	14.90	200.00	2043.00
203	281	2	2	60.00	24.00	13.00	37.00	49.30	385.60	14.44	200.00	2306.00
204	282	2	2	60.00	24.00	13.00	37.00	64.50	269.10	18.65	185.00	1785.00
205	283	2	2	81.00	32.00	15.00	47.00	66.50	328.10	20.53	120.00	2061.00
206	284	2	2	75.00	30.00	16.00	46.00	62.40	289.10	21.90	95.00	1888.00
207	285	2	2	75.00	30.00	14.00	44.00	70.00	359.50	17.98	128.00	2202.00
208	286	2	2	58.00	23.20	12.50	35.70	72.30	460.70	12.70	100.00	2530.00
209	287	2	2	60.00	24.00	13.30	40.60	61.90	406.50	20.00	65.00	1827.00
210	288	2	2	58.00	23.20	12.50	35.70	59.80	331.50	16.79	80.00	1914.00
211	289	2	2	58.00	23.20	12.50	35.70	68.90	293.10	14.30	76.00	2246.00
212	290	2	2	51.00	20.40	12.00	32.40	83.00	297.40	16.50	110.00	1742.00
213	291	2	2	50.00	20.00	13.00	33.00	102.60	420.30	17.56	100.00	1691.00
214	292	2	2	51.00	20.40	12.00	32.40	101.10	405.40	17.70	120.00	1643.00
215	293	2	2	51.00	20.40	12.00	32.40	77.20	272.20	17.78	140.00	1640.00
216	294	3.00	1	58.50	23.40	12.50	35.90	78.50	478.00	13.27	200.00	2434.00
217	298	3.00	1	49.00	19.60	14.00	33.60	62.00	264.20	15.99	160.00	1891.00
218	299	3.00	1	51.00	20.40	12.00	32.40	60.50	260.30	15.63	160.00	1866.00
219	300	3.00	1	50.00	20.00	12.00	32.00	75.60	392.10	13.52	175.00	2131.00
220	301	3.00	1	49.00	19.60	14.00	33.60	82.30	383.30	14.13	220.00	2140.00

Sl. No.	V.No.	category	Dist- rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo- hydrate intake	% cotrib. of fat	Fish consum- ption	Caloric intake
221	303	3.00	1	61.00	24.40	10.50	34.90	73.00	350.50	16.22	165.00	1936.00
222	304	3.00	1	61.00	24.40	10.50	34.90	71.20	396.50	16.87	172.00	1862.00
223	305	3.00	1	61.00	24.40	10.50	34.90	69.50	373.50	17.87	178.00	1758.00
224	306	3.00	1	56.00	22.40	10.00	32.40	81.60	363.70	16.16	155.00	1804.00
225	307	3.00	1	56.00	22.40	10.00	32.40	51.00	401.40	17.53	150.00	1663.00
226	308	3.00	1	45.00	18.00	11.00	29.00	41.10	307.50	12.31	200.00	2119.00
227	309	3.00	1	45.00	18.00	11.00	29.00	80.80	359.00	15.40	188.00	1694.00
228	310	3.00	1	54.00	21.60	14.00	35.60	68.00	335.00	16.15	150.00	1984.00
229	311	3.00	1	56.00	22.40	13.00	35.40	65.50	339.00	15.80	155.00	2016.00
230	312	3.00	1	52.00	20.80	14.50	35.60	60.00	314.00	15.90	153.00	1998.00
231	313	3.00	1	60.00	24.00	15.00	39.00	80.80	359.00	16.21	160.00	2165.00
232	314	3.00	1	60.00	24.00	15.00	39.00	74.00	303.40	18.37	160.00	1911.00
233	315	3.00	1	45.00	18.00	12.00	30.00	68.40	385.00	12.77	200.00	2115.00
234	316	3.00	1	45.00	18.00	12.00	30.00	63.20	327.00	14.50	200.00	1862.00
235	317	3.00	1	45.00	18.00	12.00	30.00	59.60	378.00	14.50	200.00	1863.00
236	318	1	1	50.00	20.00	16.60	36.60	78.60	404.50	12.21	0.00	2697.00
237	319	1	1	52.00	20.80	16.00	36.80	87.10	448.10	12.88	0.00	2572.00
238	320	1	1	48.00	19.20	15.00	34.20	85.30	447.60	18.14	0.00	1697.00
239	321	1	1	51.00	20.40	16.60	37.00	53.20	389.10	18.69	0.00	1782.00
240	323	1	1	56.00	22.40	23.00	45.50	67.20	227.40	24.89	0.00	1642.00
241	324	1	1	50.00	20.00	20.80	40.80	54.20	254.50	20.68	0.00	1775.00
242	325	1	1	51.00	20.40	20.80	41.20	58.00	241.10	25.77	0.00	1439.00

Sl. No.	V.No.	category	Dist- rict	Kernel	Oil derived from kernel	Free oil intake	Total fat intake	Protein intake	Carbo- hydrate intake	% cotrib. of fat	Fish consum- ption	Caloric intake
243	326	1	1	50.00	20.00	20.00	40.00	42.30	306.80	19.70	0.00	1828.00
244	327	1	1	49.00	19.20	19.00	38.20	30.10	203.20	23.32	0.00	1475.00
245	329	1	1	49.00	19.60	20.00	39.60	82.50	349.70	19.47	0.00	1831.00
246	330	1	1	46.00	18.40	20.00	38.40	91.90	376.10	18.65	0.00	1853.00
247	332	1	1	48.00	19.20	18.00	37.20	85.80	352.10	17.97	0.00	1863.00
248	333	1	1	51.00	20.40	25.00	35.40	70.40	511.70	16.05	0.00	2546.00
249	334	1	1	52.00	20.80	25.00	45.80	55.80	455.70	17.99	0.00	2291.00
250	336	1	1	58.00	23.20	12.00	35.20	126.30	365.40	16.02	0.00	1978.00
251	337	1	1	60.00	24.00	23.00	47.00	58.90	372.60	19.30	0.00	2192.00
252	338	1	1	60.00	24.00	24.00	18.00	65.60	339.60	20.53	0.00	2104.00
253	339	1	1	62.00	24.80	14.58	39.38	57.10	390.70	16.30	0.00	2175.00
254	340	1	1	65.00	26.00	15.00	41.00	53.90	373.70	17.14	0.00	2153.00
255	341	1	1	58.00	23.20	16.00	42.20	55.40	314.00	18.92	0.00	2007.00
256	342	1	1	60.00	24.00	16.00	40.00	40.40	242.90	23.26	0.00	1548.00
257	343	1	1	28.00	11.20	16.60	27.80	93.20	304.60	13.12	0.00	1907.00
258	344	1	1	58.00	23.20	12.00	35.20	98.60	293.00	16.32	0.00	1941.00

